In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

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Idaho Cleanup Project

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December 2005

Idaho Cleanup Project Idaho Falls, Idaho 83415

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ABSTRACT

This Groundwater Monitoring Plan supports the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* for implementing the final remedy for the Operable Unit 1-07B hot spot. The hot spot remedy will be implemented in four phases: (1) interim operations, (2) initial operations, (3) optimization operations, and (4) long-term operations. These phases begin and end based upon conditions observed in the groundwater. As a result, remedy performance and compliance with remedial action objectives will be monitored under this Groundwater Monitoring Plan throughout all implementation phases. This plan documents the procedures and rationale for groundwater monitoring to be conducted during each of the four phases. Data collected under this Groundwater Monitoring Plan will be used to assess the progress of the remedy, determine the need for operational changes, and support agency periodic performance reviews.

CONTENTS

ABS	TRAC	Γ		iii				
ACR	RONYM	IS		ix				
1.	INTRODUCTION							
	1.1	Site Bac	ekground and Hydrogeology	1-4				
	1.2	Descrip	tion of the Remedial Action	1-5				
2.	DATA	A QUALIT	ΓΥ OBJECTIVES	2-1				
3.	DATA	A COLLE	CTION PROGRAM	3-1				
	3.1	Samplin	ng Strategy	3-1				
	3.2	Samplin	ng Equipment and Procedures	3-8				
	3.3	Waste N	Management	3-8				
	3.4	Health a	Health and Safety					
4.	SAMPLE MANAGEMENT AND ANALYSIS							
	4.1	Sample	Management	4-1				
		4.1.1 4.1.2 4.1.3 4.1.4 4.1.5	Sample Designation and Sampling and Analysis Plan Tables	4-1 4-1 4-4				
	4.2	Analysis	4-4					
		4.2.1 4.2.2 4.2.3	On-Site Field Laboratory Activities	4-5				
5.	DATA	A MANA(GEMENT AND REPORTING	5-1				
6.	QUA	LITY ASS	SURANCE	6-1				
	6.1	Field La	aboratory	6-1				
		6.1.1 6.1.2	Laboratory and Field Quality Assurance					

	6.2	IRC Laboratory	6-2
		6.2.1 Laboratory and Field Quality Assurance	
	6.3	Off-Site Laboratories	6-3
		6.3.1 Laboratory and Field Quality Assurance. 6.3.2 Corrective Actions 6.3.3 Reporting 6.3.4 Data Validation	6-3 6-4
7.	REFE	RENCES	7-1
	Monit	—Agency Comments and Resolutions for the In Situ Bioremediation Groundwater oring Plan (Rev. 2, Draft)	A-1
Аррс		oring Plan (Rev. 2, Draft Final)	B-1
Арре	endix C-	—Example Sampling and Analysis Plan Tables	C-1
Appe	endix D-	—Operable Unit 1-07B In Situ Bioremediation Monitoring Well Information	D-1
		FIGURES	
1-1.	Remed	lial action implementation sequence	1-2
1-2.	In situ	bioremediation monitoring well locations	1-3
1-3.	Contar	minant plume at Test Area North	1-6
		TABLES	
3-1.		bioremediation remedial action groundwater performance monitoring strategy	3-2
3-2.		bioremediation remedial action groundwater compliance monitoring strategy	3-4
3-3.	In situ	bioremediation remedial action analytical method summary	3-6
4-1.	Sample	e collection and analysis requirements	4-2
6-1.		aboratory quality assurance frequency for in situ bioremediation remedial action	6-1

6-2.	IRC laboratory quality assurance frequency for in situ bioremediation remedial action groundwater monitoring	6-2
6-3.	Off-Site laboratory quality assurance requirements for definitive data	
6-4.	Field quality-assurance frequencies for definitive data	6-3



ACRONYMS

bls below land surface

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CFR Code of Federal Regulations

COC chain of custody

COD chemical oxygen demand

D&D&D deactivation, decontamination, and decommissioning

DCE dichloroethene

DEQ [Idaho] Department of Environmental Quality

DOE U.S. Department of Energy

DOE-ID U.S. Department of Energy Idaho Operations Office

DQO data quality objective

EPA U.S. Environmental Protection Agency

ER environmental restoration

FFA/CO Federal Facility Agreement and Consent Order

FLL field lab lead

FLUTe Flexible Liner Underground Technologies

FTL field team leader

GC-FID gas chromatography–flame ionization detector

HDPE high-density polyethylene

ID identification

INEEL Idaho National Engineering and Environmental Laboratory

INL Idaho National Laboratory

IRC INL Research Center

ISB in situ bioremediation

MCL maximum contaminant level

MCP management control procedure

MDL method detection limit

MNA monitored natural attenuation

NA not applicable

NPTF New Pump and Treat Facility

OU operable unit

PCE tetrachloroethene

PLN plan

QA quality assurance

QAPjP quality assurance project plan

QC quality control

RA remedial action

RAO remedial action objective

RAWP remedial action work plan

SAM Sample and Analysis Management

SAP sampling and analysis plan

SOW statement of work

SPME solid-phase micro extraction

TAN Test Area North

TBD to be determined

TCE trichloroethene

TOS Task Order Statement

TPR technical procedure

TSF Technical Support Facility

USC United States Code

VOA volatile organic analysis

VOC volatile organic compound

In Situ Bioremediation Remedial Action Groundwater Monitoring Plan for Test Area North, Operable Unit 1-07B

1. INTRODUCTION

This Groundwater Monitoring Plan supports the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a). It implements the final remedy, as identified in the *Record of Decision Amendment Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites, Final Remedial Action* (DOE-ID 2001). The remedy entails injection of an electron donor to stimulate in situ biodegradation of chloroethene contaminants and groundwater sampling from a network of wells to monitor the process. Elements of the remedy added subsequent to the signature of the Record of Decision Amendment include an electron donor injection facility and two new monitoring wells. The injection facility consists of a new injection well (TAN-1859), injection equipment, and on-Site laboratory capabilities. The two new monitoring wells, TAN-1860 and TAN-1861, have been located to provide crossgradient-monitoring capabilities in the vicinity of TAN-28 and TAN-30A. Data collected in accordance with this Groundwater Monitoring Plan will be used to assess the progress of the remedy, determine the need for operational changes, and support agency periodic performance reviews.

This document has been reviewed in accordance with governing requirements of the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991) for primary documents. Appendix A contains agency comments and the comment resolutions from the agency review of the In Situ Bioremediation (ISB) Groundwater Monitoring Plan (Rev. 2, Draft) version of this document. Appendix B contains comments and comment resolutions from the agency review of this ISB Groundwater Monitoring Plan (Rev. 2, Draft Final) version.

Implementation of the Operable Unit (OU) 1-07B final remedy is defined in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a). The ISB component of the remedy will be implemented in four phases (see Figure 1-1), as follows:

- <u>Interim Operations</u>: This phase was a continuation of predesign operational activities, including lactate injection and performance monitoring. Activities were implemented to evaluate alternate electron donors, develop injection and monitoring strategies that supported initial operations, and refine the ISB simulation model. Interim operations ended when construction of the electron-donor injection facility and new monitoring wells were completed. The interim operations phase was conducted from October 2002 through September 2003.
- <u>Initial Operations</u>: This phase of remedy implementation began upon construction completion. It focuses on distributing electron donor adequately throughout the residual source area and cutting off downgradient contaminant flux of volatile organic compounds (VOCs) from the hot spot. Initial operations will be complete when VOC concentrations at TAN-28 and TAN-30A (shown on the map of monitoring well locations in Figure 1-2) are below maximum contaminant levels (MCLs). This phase began in October 2003.
- Optimization Operations: This phase will focus on (1) maintaining adequate electron donor distribution to remediate the aquifer in the vicinity of the hot spot to risk-based levels and (2) cutting off crossgradient flux of VOCs from the hot spot. This phase of operations will be complete when VOC concentrations at TAN-1860 and TAN-1861 (shown on Figure 1-2) are below the MCLs.

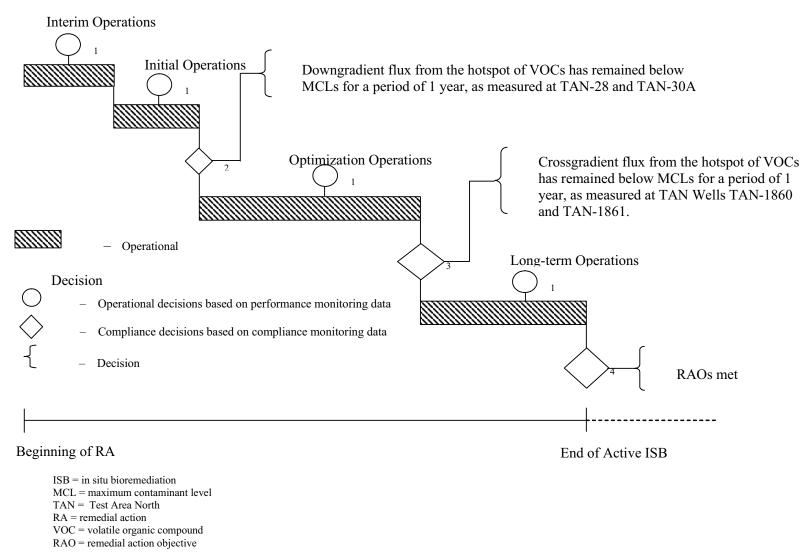


Figure 1-1. Remedial action implementation sequence.

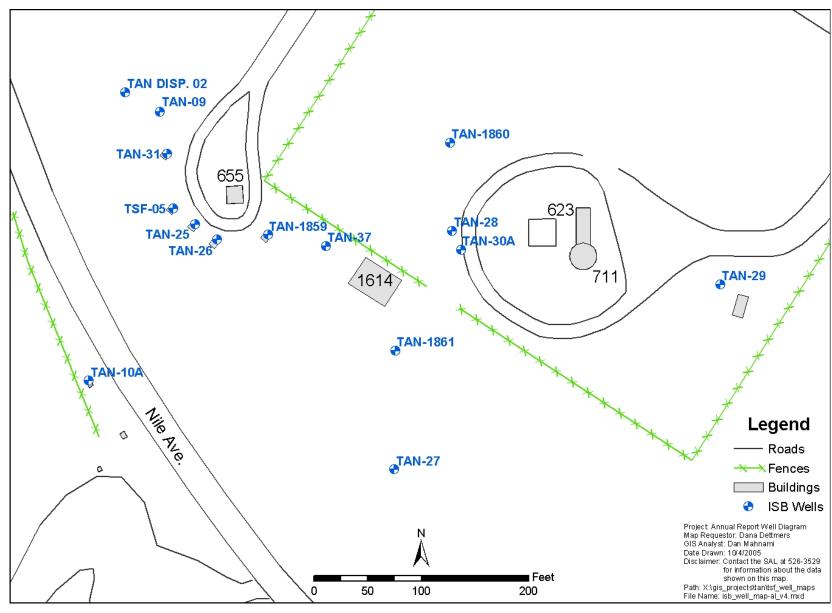


Figure 1-2. In situ bioremediation monitoring well locations.

• <u>Long-Term Operations</u>: This phase will begin when electron donor is distributed throughout the residual source area. Continued ethene production also will be observed throughout this phase. This phase of operations will be complete when ethene production has ceased and VOC concentrations are below risk-based levels throughout the hot spot area.

Figure 1-1 shows the decisions to be made during remedy implementation, including operational performance decisions and compliance decisions. Specific decisions corresponding to the numbers shown in Figure 1-1 include:

- <u>Decision 1</u> Determine in each of the four phases whether operational changes are required by routinely monitoring the performance of the ISB system with respect to indicator parameters including VOCs; tritium; Sr-90; Cs-137; gross alpha ethene, ethane, and methane; redox parameters; electron donor; bioactivity; and nutrients.
- <u>Decision 2</u> Determine whether downgradient flux of contaminants from the hot spot has been cut off, as evidenced by VOC concentrations below the MCLs at TAN-28 and TAN-30A.
- <u>Decision 3</u> Determine whether crossgradient flux of contaminants from the hot spot has been cut off, as evidenced by VOC concentrations below the MCLs at TAN-1860 and TAN-1861.
- <u>Decision 4</u> Determine whether long-term operations are complete. (The compliance criteria for long-term operations will be specified in the ISB Remedial Action Report.)

Groundwater monitoring data are required during each phase of remedy implementation to support the decisions listed above. This Groundwater Monitoring Plan implements the U.S. Environmental Protection Agency (EPA) data quality objective (DQO) process (EPA 1994), which was used to design and implement a data collection plan to acquire the required data at quality levels appropriate for data uses for each phase. The DQO development is discussed in detail in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a) and summarized in Section 2 of this Groundwater Monitoring Plan. Following discussion of the DQOs, this Groundwater Monitoring Plan presents the monitoring strategy for ISB and defines the protocols to be used for groundwater sample management (i.e., collection, handling, and analysis), data management, and quality assurance (QA) activities associated with the ISB remedial action. This Groundwater Monitoring Plan does not specifically address data collection for other OU 1-07B remedy components, which include pump-and-treat of the medial zone and monitored natural attenuation (MNA) of the distal zone. However, data collected as part of ISB remedy implementation may be used by other remedy components to fulfill their respective data needs.

Supporting information for this Groundwater Monitoring Plan is contained in Appendixes C and D. Appendix C contains examples of the Sampling and Analysis Plan (SAP) tables that will be created for each sampling event to implement the sampling strategy. Actual SAP tables for each reporting period will be compiled in the ISB Periodic Report. Appendix D contains construction details for the monitoring wells that will be sampled.

1.1 Site Background and Hydrogeology

The TSF-05 injection well was used from 1953 to 1972 to dispose of liquid waste streams generated by operations at Test Area North (TAN) on the Idaho National Laboratory (INL) site (previously known as the Idaho National Engineering and Environmental Laboratory [INEEL]). These waste streams included low-level radioactive wastewater, industrial wastewater, organic solvents, and sanitary sewage. The practice of waste injection into the Snake River Plain Aquifer resulted in a plume of

contamination nearing 3 km (2 mi) in length. Detailed descriptions of the historical background can be found in the *Remedial Investigation Final Report with Addenda for the Test Area North Groundwater Operable Unit 1-07B at the Idaho National Engineering Laboratory* (Kaminski et al. 1994) and in the *Record of Decision Declaration for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action* (DOE-ID 1995). The contaminants of concern in groundwater at the site include the VOCs trichloroethene (TCE), tetrachloroethene (PCE), trans-1,2-dichloroethene (trans-1,2-dichloroethene [DCE]), and cis-1,2-dichloroethene (cis-1,2-DCE) as well as the radionuclides tritium (H-3), strontium-90 (Sr-90), cesium-137 (Cs-137), and potentially uranium-234 (U-234). Figure 1-3 shows the contaminant plume and its location with respect to the Technical Support Facility (TSF).

The Snake River Plain Aquifer underlying TAN is composed of a complex layering of fractured basalt flows and sedimentary interbeds deposited during prolonged periods of volcanic quiescence. Depth to water in the vicinity of TAN is approximately 64 m (210 ft). The most significant recharge feature with respect to the groundwater contamination at TAN is a disposal pond west of the TSF-05 well. Constructed in 1971 for disposal of the liquid waste streams previously discharged to the TSF-05 injection well, this pond receives on average approximately 104,300 L (27,550 gal) per day and 3.17 million L (838,000 gal) per month of wastewater, based on 2001 operating records. Recharge from this pond is believed to play a significant role in the eastward migration of TCE from the TSF-05 well (Sorenson, Wylie, and Wood 1996).

The aquifer at TAN appears to be unconfined, although locally confined conditions might exist due to the presence of sedimentary interbeds or dense, relatively impermeable basalt flows. The most significant sedimentary interbed at TAN occurs at about 125 m (410 ft) below land surface (bls) at the TSF-05 well. This interbed ranges in thickness from about 2.4 m (8 ft) to more than 6 m (20 ft) and is laterally continuous and extensive. All evidence gathered to date suggests that this interbed effectively isolates the aquifer below it from the water above it. It is important to note that the interbed slopes approximately 1 degree in a southerly direction; thus, the thickness of the aquifer above the interbed at TAN increases from about 61 m (200 ft) near the TSF-05 well to more than 91 m (300 ft) at the leading edge of the TCE plume.

The TCE plume within the aquifer is stratified near the source area with the highest concentrations in the upper portions of the aquifer. Several conceptual model reports published since extensive characterization work has been conducted detail the understanding of stratigraphy, aquifer behavior, and TCE plume dynamics (Bukowski and Sorenson 1998; Bukowski, Bullock, and Neher 1998; Wymore, Bukowski, and Sorenson 2000).

1.2 Description of the Remedial Action

In situ bioremediation was identified in the *Record of Decision Amendment Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites, Final Remedial Action* (DOE-ID 2001) as the remedy for the hot spot, which was defined in 1997 as that portion of the contaminant plume with TCE concentrations greater than 20,000 μg/L (INEEL 1997). In situ bioremediation takes advantage of naturally occurring bacteria that break down contaminants during metabolism of a food source. The particular application of ISB at TAN requires injection of an electron donor (i.e., sodium lactate or whey powder) into the secondary source area in the hot spot. This amendment increases the number of bacteria, thereby increasing the rate at which the VOCs are degraded to nonhazardous compounds. This technology destroys the organic compounds in the hot spot without bringing them above ground, preventing risk to workers and the

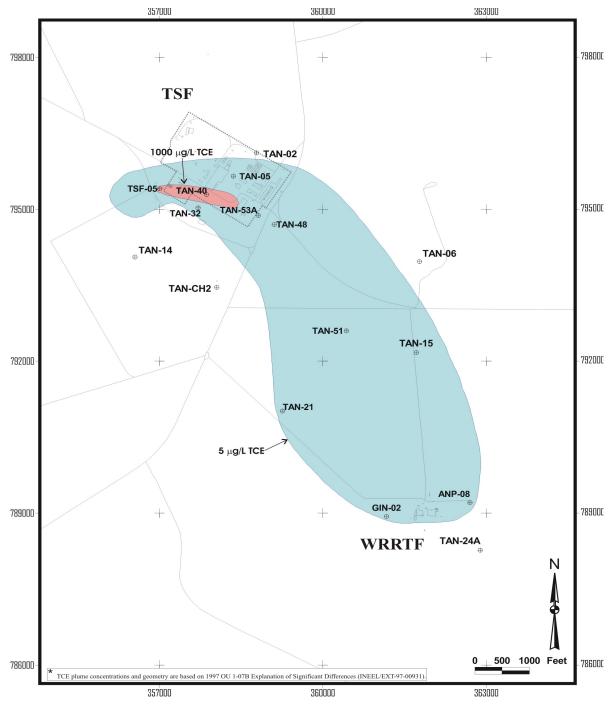


Figure 1-3. Contaminant plume at Test Area North.

environment. Based on actual field observations, ISB also degrades the secondary source. Degradation products generated by the bioremediation process (e.g., DCE and vinyl chloride) are degraded by the same process as ethene, chloride, water, and carbon dioxide.

Application of the ISB remedy at TAN will occur in the four phases described in Section 1, which are shown graphically in Figure 1-1 and described in detail in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a). These phases begin and end based upon conditions observed in the groundwater. For this reason, groundwater monitoring is a necessary component of the remedial action. This plan documents the procedures and rationale for groundwater monitoring to be conducted during each of the four phases. In situ bioremediation operations and maintenance for implementation of these four phases are addressed separately in the *In Situ Bioremediation Operations and Maintenance Plan for Test Area North, Operable Unit 1-07B* (DOE-ID 2004b).

2. DATA QUALITY OBJECTIVES

Development of DQOs for the ISB component of the remedy is presented in detail in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a) and summarized in this section. The DQOs have been prepared based on decisions requiring groundwater monitoring data as well as on EPA DQO guidance (EPA 1994), MDLs, and experience with the sampling and analysis methods to date. Requirements for data quality for all INL Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.) investigations and remedial responses are defined in the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Deactivation, Decontamination, and Decommissioning* (DOE-ID 2004c).

Decisions requiring groundwater monitoring data (see Figure 1-1) are listed in Section 1 of this report. The compliance decisions are based on the remedial action objectives (RAOs) and performance criteria for the ISB component of the remedy, as discussed in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a). The operational decisions are based on performance indicators developed during 4 years of field experience at OU 1-07B, as described in the *In Situ Bioremediation Operations and Maintenance Plan for Test Area North, Operable Unit 1-07B* (DOE-ID 2004b). Application of the DQO process to these decisions has resulted in the data collection program described in Section 3.

3. DATA COLLECTION PROGRAM

This section describes the program designed to collect data at the appropriate locations, frequencies, and quality levels required to support Decisions 1 through 4 listed in Section 1. It also contains details of the data collection program, including sampling strategy, equipment, and procedures that support implementation of the ISB remedy component.

3.1 Sampling Strategy

The ISB sampling strategy for monitoring the status of the ISB remedy is based on the results of the DQO process and the experience gained during ISB field evaluation and predesign operations. Two types of monitoring (i.e., performance and compliance) are defined and a detailed discussion of the specific indicator parameters for both types of monitoring is provided in this section.

Tables 3-1 and 3-2 portray the performance and compliance monitoring strategies, respectively, for the four operational phases: locations, analytes, sampling frequencies, and data quality levels. Data quality levels are fully defined and their application is discussed in the Quality Assurance Project Plan (QAPjP) (DOE-ID 2004c) as well as in the DQO development discussion in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a). Definitive data have been required to date for assessing completion of remedial actions at the INL, and this data quality level is cited for ISB compliance monitoring for initial, optimization, and long-term operations. In general, definitive-level data are generated using rigorous analytical methods such as approved EPA or American Society of Testing and Materials methods. Either analytical or total measurement error must be determined. Definitive data quality assurance/quality control (QA/QC) elements include the following (DOE-ID 2004c):

- Sample documentation (e.g., location, date, and time).
- Chain of custody.
- Sampling design approach.
- Initial and continuing calibration.
- Determination and documentation of detection limits.
- Analyte or property identification.
- QC blanks (field and method).
- Matrix spike recoveries.
- Analytical error determination. One sample will be analyzed in replicate and the mean and standard deviation will be determined and reported.
- Total measurement error determination. Duplicate samples will be collected at one sampling location for each day of sampling, analyzed, and the mean and standard deviation determined and reported.

Screening-level data (generated using rapid, less precise analytical methods with less rigorous sample preparation) are cited for all performance monitoring indicators except VOCs, for which screening with definitive confirmation is specified. Screening with definitive confirmation is defined in the QAPjP (DOE-ID 2004c) as "...at least 10% of the screening data are confirmed using analytical methods and QA/QC procedures and criteria associated with definitive data." Definitive confirmation will not be used for performance indicators that do not have action levels.

Table 3-1. In situ bioremediation remedial action groundwater performance monitoring strategy summary.

1 11 2100 0101 010	nediation remedial action groundwater performance monitoring strategy summary.							
	Operational Phase							
Monitoring Type/Strategy Element	Interim	Initial (October 2003 through September 2005)	Initial (October 2005 through duration of the phase)	Optimization	Long-Term			
Decision number		1	1	1	1			
Monitoring locations	TSF-05A, TSF-05B, TAN-10A, TAN-25, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-31, TAN-37A, TAN-37B, TAN-37C, and TAN-D2	TSF-05A, TSF-05B, TAN-10A, TAN-25, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-31, TAN-37A, TAN-37B, TAN-37C, TAN-1859, TAN-1860, TAN-1861, and TAN-D2	TAN-37B, TAN TAN-1860, and	28, TAN-29, N-31, TAN-37A, N-1859, I TAN-1861 I-10A, TAN-26,	TSF-05A, TSF-05B, TAN-10A, TAN-25, TAN-26, TAN-27, TAN-28, TAN-29, TAN-30A, TAN-31, TAN-37A, TAN-37B, TAN-37C, TAN-1859, TAN-1860, TAN-1861, TAN-D2, and TAN-9			
Monitoring frequency/analytes	Monthly: VOCs (PCE, TCE, cis-DCE, trans-DCE, and vinyl chloride), electron donors (COD, lactate, acetate, propionate, and butyrate), redox parameters (ferrous iron and sulfate), bioactivity parameters (alkalinity), dissolved gases (ethene, ethane, and methane), and tritium Semiannual: Nutrients (ammonia-nitrogen and phosphate), definitive confirmation (off-Site splits) for VOCs	Monthly: VOCs (PCE, TCE, cis-DCE, trans-DCE, and vinyl chloride), electron donors ^a (COD, lactate or lactose, acetate, propionate, butyrate, isobutyrate, isovalerate, valerate, hexanoate, and formate), redox parameters (ferrous iron and sulfate), bioactivity parameters (alkalinity), dissolved gases (ethene, ethane, and methane), and tritium Semiannual: Nutrients (ammonia-nitrogen and phosphate), definitive confirmation (off-Site splits) for VOCs		-DCE, vinyl chloride), a (COD, lactate ate, propionate, yrate, erate, hexanoate, edox parameters d sulfate), meters solved gases and methane), efinitive	Quarterly: VOCs (PCE, TCE, cis-DCE, trans-DCE, and vinyl chloride), electron donors ^a (COD, lactate or lactose, acetate, propionate, butyrate, isobutyrate, isovalerate, valerate, hexanoate, and formate), redox parameters (ferrous iron and sulfate), bioactivity parameters (alkalinity), dissolved gases (ethene, ethane, and methane), and tritium Annual: Definitive confirmation (off-Site splits) for VOCs			

Table 3-1. (continued).

	Operational Phase						
Monitoring Type/Strategy Element	Interim	Initial (October 2003 through September 2005)	Initial (October 2005 through duration of the phase)	Optimization	Long-Term		
Data quality required ^b	Screening with definitive confirmation for VOCs						
	Definitive for radionuclides						
Screening for all other analytes							
Data validation level	Level A for VOC definitive confirmation and radionuclide analyses						
required ^c	No data validation for on-Site and IRC laboratory data						

- a. A complete description of the operational phase transitions and the decision numbers is included in Section 1 of this Groundwater Monitoring Plan. Initial operations continue until the concentration of VOCs is less than the applicable MCL at Well TAN-28 and TAN-30A for a period of 1 year. Optimization operations continue until the concentration of VOCs is less than the applicable MCL at Well TAN-1860 and TAN-1861 for a period of 1 year. Long-term operations continue until the ISB remedial action is complete.
- b. Data quality levels are defined in the QAPjP (DOE-ID 2004c).
- c. Data validation levels are defined in the QAPjP (DOE-ID 2004c).
- COD = chemical oxygen demand
- DCE = dichloroethene
- DOE-ID = U.S. Department of Energy Idaho Operations Office
- INL = Idaho National Laboratory
- IRC = INL Research Center
- ISB = in situ bioremediation
- MCL = maximum contaminant level
- PCE = tetrachloroethene
- QAPjP = quality assurance project plan TAN = Test Area North
- TCE = trichloroethene
- TSF = Technical Support Facility
- VOC = volatile organic compound

Table 3-2. In situ bioremediation remedial action groundwater compliance monitoring strategy summary.

Monitoring	Operational Phase				
Type/Strategy Element	Interim	Initial ^a	Optimization ^a	Long-Term ^b	
Decision number	NA	2	3	4	
Monitoring duration	NA	1 3	year	TBD	
Monitoring frequency	NA	Qua	TBD		
Monitoring locations	NA	TAN-28 TAN-30A	TAN-1860 and TAN-1861	TBD	
Analytes	NA	VOCs (PCE, TCE, cis-DCE, trans-DCE, and vinyl chloride)		TBD	
Data quality required ^b	NA	Definitive		TBD	
Data validation level required ^c	NA	Level A		TBD	

a. A complete description of the operational phase transitions and the decision numbers is included in Section 1 of this Groundwater Monitoring Plan. Initial operations continue until the concentration of VOCs is less than the applicable MCL at Well TAN-28 and TAN-30A for a period of 1 year. Optimization operations continue until the concentration of VOCs is less than the applicable MCL at Well TAN-1860 and TAN-1861 for a period of 1 year. Long-term operations continue until the ISB remedial action is complete.

c. Data validation levels are defined in the QAPjP (DOE-ID 2004c).

DCE = dichloroethene

DOE-ID = U.S. Department of Energy Idaho Operations Office

ISB = in situ bioremediation

MCL = maximum contaminant level

NA = not applicable

PCE = tetrachloroethene

QAPjP = quality assurance project plan

TAN = Test Area North

TBD = to be determined

TCE = trichloroethene

VOC = volatile organic compound

It is important to note that TAN-1860 and TAN-1861 may be equipped such that multiple locations can be sampled in each well and that TAN-37 may be equipped such that more than the three current monitoring locations can be sampled. The minimum performance-monitoring requirement for these wells for initial and optimization operations is to sample one location each in TAN-1860 and TAN-1861 and the three currently monitored locations in TAN-37 during each monthly performance-monitoring round. Periodic sampling of additional locations in these wells will be conducted in accordance with direction from the ISB technical lead and/or project manager, and the SAP tables will be adjusted accordingly. In addition, TAN-1859 may be sampled periodically for performance indicators, as directed by the ISB technical lead and/or project manager.

The overall OU 1-07B ISB remedial action performance and compliance monitoring sampling strategies include the following:

b. Data quality levels are defined in the QAPjP (DOE-ID 2004c). The Long-Term Operations Phase will begin following completion of the Optimization Operations Phase and this plan will be updated to address the Long-Term Monitoring Plan.

- Interim Operations Performance Monitoring (Decision 1): This monitoring included monthly sampling for performance indicator parameters at 14 ISB locations (listed in Table 3-1) for the duration of the phase. Monthly monitoring at the 14 existing locations during the ISB field evaluation and predesign operations was found to effectively identify trends in parameters that indicate ISB system performance (INEEL 2000). This performance monitoring strategy also included deploying and maintaining multiparameter water-quality instruments and/or transducers, as directed by the ISB technical lead. This phase was conducted from October 2002 through September 2003.
- Initial Operations Performance Monitoring (Decision 1): Initial operations performance monitoring began in October 2003. From October 2003 through September 2005, monitoring was conducted at the locations listed in Table 3-1 for the performance indicator parameters. Monitoring from October 2005 through the duration of the phase includes monthly sampling at 12 ISB locations and quarterly sampling at six ISB locations for performance indicator parameters (Table 3-1). This strategy incorporates monthly monitoring for VOCs at TAN-28 and TAN-30A to determine downgradient contaminant flux trends. Shorter-interval sampling for subsets of the performance indicators as well as sampling of additional locations in TAN-37, TAN-1860, and TAN-1861 may be implemented, as directed by the ISB technical lead. This performance monitoring strategy also includes use of multiparameter water-quality instruments and/or transducers in specific wells, as directed by the ISB technical lead.
- <u>Initial Operations Compliance Monitoring (Decision 2):</u> The strategy for determining when downgradient flux is cut off includes quarterly monitoring for 1 year at TAN-28 and TAN-30A for VOCs. This sampling will begin when performance monitoring indicates that VOC concentrations are below MCLs at TAN-28 and TAN-30A. These sampling events will be coordinated with regular monthly performance sampling; the samples will be analyzed using definitive methods.
- Optimization Operations Performance Monitoring (Decision 1): This performance monitoring includes monthly sampling at 12 ISB locations and quarterly sampling at six ISB locations for performance indicator parameters for the duration of the phase. The monthly sampling frequency will be continued in order to identify any trends requiring operational modifications. This strategy incorporates monthly monitoring for VOCs at TAN-1860 and TAN-1861 to determine crossgradient contaminant-flux trends. Shorter-interval sampling for subsets of the performance indicators as well as sampling of additional locations in TAN-37, TAN-60, and TAN-61 may be implemented, as directed by the ISB technical lead. This performance monitoring strategy also includes use of multiparameter water-quality instruments and/or transducers in specific wells, as directed by the ISB technical lead.
- Optimization Operations Compliance Monitoring (Decision 3): The strategy for determining when crossgradient flux of contaminants from the hot spot is cut off includes quarterly monitoring for VOCs for 1 year at TAN-1860 and TAN-1861. This sampling will begin when performance monitoring indicates that VOC concentrations are below the MCLs at TAN-1860 and TAN-1861. These sampling events will be coordinated with regular monthly performance sampling; the samples will be analyzed using definitive methods.
- Long-Term Operations Performance Monitoring (Decision 1): This performance monitoring strategy includes quarterly sampling for performance indicator parameters at 18 ISB locations for the duration of the phase. The ISB system will be functional and operational during this phase with a defined operating strategy, thereby reducing performance-sampling requirements. The number of monitoring locations and analytes may be reduced during this phase, as directed by the ISB technical lead. Shorter-interval sampling for subsets of the performance indicators as well as sampling of TAN-1859 and sampling of additional locations in TAN-37, TAN-1860, and TAN-1861 may be implemented as needed to observe transient conditions. This performance

monitoring strategy also includes use of multiparameter water-quality instruments and/or transducers in specific wells, as directed by the ISB technical lead.

• <u>Long-Term Operations Compliance Monitoring (Decision 4):</u> The Remedial Action Report will establish the sampling strategy to define when the remedy is complete.

Table 3-3 defines analytical methods, action levels, method detection limits (MDLs), and data quality levels for each analyte and each monitoring phase. All other sampling and analysis details—including container types, sample preservation, holding time, analytical methods, and chain of custody (COC) requirements—are addressed in Section 4.

Nonroutine samples may be collected occasionally for various research projects or for other purposes. Sampling and analysis tables will be prepared for these nonroutine samples, as required. Nonroutine sampling will be coordinated with routine sampling to the extent feasible.

Table 3-3. In situ bioremediation remedial action analytical method summary.

	Action	Analytical	Method Detection	Monitoring Phase or Other
Analyte	Level ^a	Method	Limit ^{b,c}	Data Collection Activity
VOCs	5 μg/L	EPA 524.2 ^d wide-bore capillary column	0.19 μg/L	Compliance
TCE	NA NA	SW-846 8260B ^e SPME-GC-FID	5 μg/L 0.9 μg/L	Definitive confirmation Performance
P.C.F.	5 μg/L	EPA 524.2 wide-bore capillary column	0.14 μg/L	Compliance
PCE	NA NA	SW-846 8260B SPME-GC-FID	5 μg/L 4.6 μg/L	Definitive confirmation Performance
· DGE	70 μg/L	EPA 524.2 wide-bore capillary column	0.12 μg/L	Compliance
cis-DCE	NA NA	SW-846 8260B SPME-GC-FID	5 μg/L 1.3 μg/L	Definitive confirmation Performance
	100 μg/L	EPA 524.2 wide-bore capillary column	0.06 μg/L	Compliance
trans-DCE	NA NA	SW-846 8260B SPME-GC-FID	5 μg/L 0.5 μg/L	Definitive confirmation Performance
	2 μg/L	EPA 524.2 wide-bore capillary column	0.17 μg/L	Compliance
Vinyl chloride	NA NA	SW-846 8260B SPME-GC-FID	5 μg/L 2.2 μg/L	Definitive confirmation Performance
Radionuclidesg				
Tritium	NA	Liquid scintillation counting	400 pCi/L	Performance
Electron Donors				
Lactate	NA	Ion chromatography	0.223 mg/L	Performance
Lactose	NA	GC-FID	100 mg/L	Performance
Acetate	NA	GC-FID	1.9 mg/L	Performance
Propionate	NA	GC-FID	1.7 mg/L	Performance
Butyrate	NA	GC-FID	1.7 mg/L	Performance
Isobutyrate	NA	GC-FID	1.8 mg/L	Performance

Table 3-3. (continued).

	Action	Analytical	Method Detection	Monitoring Phase or Other
Analyte	Level ^a	Method	Limit ^{b,c}	Data Collection Activity
Isovalerate	NA	GC-FID	1.9 mg/L	Performance
Valerate	NA	GC-FID	1.9 mg/L	Performance
Hexanoate	NA	GC-FID	2.0 mg/L	Performance
Formate	NA	GC-FID	2.4 mg/L	Performance
COD	NA	Hachf Method 10067	14 mg/L	Performance
Redox Indicators				
Sulfate	NA	Hach Method 8051	4.9 mg/L	Performance
Iron	NA	Hach Method 8146	0.03 mg/L	Performance
pН	NA	Multiparameter	0–14 units	Performance
		water-quality instrument		
Oxidation reduction	NA	Multiparameter	-999–+999 mV	Performance
potential		water-quality instrument		
Bioactivity Indicators				
Alkalinity	NA	Hach Method 8203	10 mg/L	Performance
Specific conductance	NA	Multiparameter water-quality instrument	0-100 mS/cm	Performance
Dissolved Gases		water quanty matument		
Ethene	NA	GC-FID	1 μg/L	Performance
Ethane	NA	GC-FID	1 μg/L	Performance
Methane	NA	GC-FID	1 μg/L	Performance
Nutrients				
Ammonia nitrogen	NA	Hach Method 10023	0.02 mg/L	Performance
		(for low range)		
		Hach Method 10031		
		(for high range)		
Orthophosphate	NA	Hach Method 8048	0.05 mg/L	Performance

a. Action levels apply only to compliance monitoring, for which chloroethene levels are compared to MCLs to determine the end of phase.

COD = chemical oxygen demand

DCE = dichloroethene

DOE-ID = U.S. Department of Energy Idaho Operations Office

EPA = U.S. Environmental Protection Agency

GC-FID = gas chromatography-flame ionization detector

MCL = maximum contaminant level

MDL = method detection limit

NA = not applicable

PCE = tetrachloroethene

PLN = plan

SPME = solid-phase micro extraction

TCE = trichloroethene

VOC = volatile organic compound

b. The MDLs are determined as follows: EPA method organics and radionuclides from the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Deactivation, Decontamination, and Decommissioning* (DOE-ID 2004c); multiparameter water-quality instrument parameters' ranges reported are from the Minisonde 4a manual; Hach methods, electron donor, and SPME organics reported in the "Data Management Plan Test Area North, Operable Unit 1-07B" (PLN-1750).

c. For purposes of this Groundwater Monitoring Plan, "Detection limits must not exceed one tenth the risk-based or decision-based concentrations for the contaminants of concern" (DOE-ID 2004c). This applies to compliance monitoring only. Chloroethene action levels were divided by 10 and compared to the MDL to determine appropriate analytical methods for compliance monitoring.

d. "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry" (EPA 1992)

e. "Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)" (EPA 1996)

f. Hach Company, P.O. Box 389, Loveland, Colorado, 80539-0389, telephone: (800) 227-4224

g. Monitoring requirements for Sr-90 and Cs-137 are stated in the Monitored Natural Attenuation Operations, Monitoring, and Maintenance Plan for Test Area North, Operable Unit 1-07B (DOE-ID 2003).

3.2 Sampling Equipment and Procedures

Samples will be collected to implement the strategies summarized in Tables 3-1 and 3-2 in accordance with the SAP tables prepared prior to each sampling event by INL Sample and Analysis Management (SAM) Program under the direction of the ISB field team leader (FTL). Example SAP tables for each phase of operations and type of monitoring (performance or compliance) are presented in Appendix C. The FTL and sampling technicians will perform sample collection activities. The general roles of each are defined in the *Test Area North Operable Unit 1-07B Final Groundwater Remedial Action Health and Safety Plan* (ICP 2005a) while the specific responsibilities for each position are delineated in the procedures referenced below.

Sampling for wells equipped with submersible pumps will be conducted using the equipment and techniques specified in Technical Procedure (TPR) -165, "Low-Flow Groundwater Sampling Procedure." Sampling for wells equipped with Flexible Liner Underground Technologies (FLUTe)^a sampling systems will be sampled in accordance with TPR-6371, "Flexible Liner Underground Technology (FLUTeTM) Water Sampling." These procedures address training, equipment, instrument standardizations, purging, sampling, purge water management, decontamination and cleaning of equipment, and recordkeeping of this monitoring plan. These procedures will be updated, as required, for the duration of monitoring. All sampling activities will be documented in accordance with Management Control Procedure (MCP) -1194, "Logbook Practices for ER and D&D&D Projects."

Multiparameter water-quality instruments may be used for collecting purge parameter data during sampling and for in situ deployment in wells specified by the ISB technical lead for the duration of the remedy implementation. Multiparameter water-quality instruments will be deployed, operated, and maintained as specified in TPR-6247, "Operable Unit 1-07B TROLL 9000 Water Quality Probe Operation and Maintenance," for Trolls and TPR-6248, "Operable Unit 1-07B Hydrolab Operation and Maintenance," for the Hydrolabs. These procedures address instrument standardization, programming, and downloading; maintenance and repair; deployment and retrieval; and recordkeeping. They will be updated, as required, for the duration of monitoring.

Construction information for the OU 1-07B ISB monitoring wells is shown in Appendix D and is maintained in the OU 1-07B project files and the INL Hydrogeologic Data Repository. The information includes name, location, material type, depth, interval (screened or open), top of casing elevation, pump type, discharge hose or pipe dimension, sampling depth, and estimated purge volume for each well (current as of the date of publication). Portable equipment will be used to sample wells with no dedicated pump installed.

3.3 Waste Management

The sampling activities described above will generate potentially contaminated wipes, sample bottles, personal protective equipment, sample rinsates, and purge water. All waste generated as a result of ISB groundwater monitoring activities will be managed in compliance with the requirements of the *Waste Management Plan for Test Area North Final Groundwater Remediation Operable Unit 1-07B* (ICP 2005b).

a. Mention of specific products or manufacturers in this document implies neither endorsement or preference nor disapproval by the U.S. Government, any of its agencies, or CH2M-WG Idaho, LLC, of the use of a specific product for any purpose.

3.4 Health and Safety

Health and safety program requirements are addressed in the *Test Area North Operable Unit 1-07B Final Groundwater Remedial Action Health and Safety Plan* (ICP 2005a). This Health and Safety Plan has been prepared to meet the Occupational Safety and Health Administration standard, "Hazardous Waste Operations and Emergency Response" (29 CFR 1926.65) and governs all work performed as a part of the *In Situ Bioremediation Operations and Maintenance Plan for Test Area North, Operable Unit 1-07B* (DOE-ID 2004b).

4. SAMPLE MANAGEMENT AND ANALYSIS

The ISB final remedial action groundwater-monitoring program includes three analytical components: (1) on-Site field analyses and measurements, (2) analyses performed at the INL Research Center (IRC), and (3) analyses performed at off-Site laboratories. This section describes the protocols to be followed during all sample management (i.e., those activities immediately following sample collection) and analysis activities. The FTL is responsible for implementing all sample management protocols, and the field lab lead (FLL) is responsible for implementing all sample analysis protocols.

4.1 Sample Management

4.1.1 Sample Designation and Sampling and Analysis Plan Tables

A character-based sample identification (ID) system determined by the SAM Program will be used to identify each sample with a unique ID code, which is provided by the SAM Program at the time the SAP tables are prepared. The SAP tables will be used to record all pertinent information (including monitoring locations, sample designations, media, dates, analysis types, and comments) associated with each sample ID code. Example SAP tables for each monitoring phase are provided in Appendix C. In an effort to minimize SAP discrepancies, SAP tables will be prepared immediately prior to each sampling event and the completed SAP tables will be included in the pending ISB Periodic Report for the reporting period. The FTL is responsible for SAP table accuracy.

4.1.2 Sample Preservation and Preparation

Table 4-1 defines the analyses to be performed by the on-Site field laboratory, IRC laboratory, and off-Site laboratories. For each analyte listed, the container size and type, preservative, analytical method, and holding time are provided. Samples requiring 4° C preservation will be chilled in coolers containing frozen, reusable ice immediately upon collection and will be maintained at a temperature $\leq 4^{\circ}$ C prior to shipment to ensure adequate preservation.

Sample bottles will be preserved prior to sample collection for those samples requiring zero headspace (i.e., ethene, ethane, methane, and VOCs analyzed off-Site). Appropriate acid will be added (and the pH checked after sample collection) to obtain a pH between 1.6 and 2 for those samples requiring preservation at a pH <2 that do not require zero headspace. Samples analyzed off-Site will be handled and preserved in accordance with the governing SAM Task Order Statement (TOS) (to be determined).

The priority indicated in Table 4-1 for field laboratory analyses is related to the holding times for those particular analyses. All of the field analyses will be performed in accordance with TPR-166, "In Situ Bioremediation Field Laboratory Procedure," within the stated holding time.

4.1.3 Chain of Custody

To maintain and document possession of samples shipped to a laboratory for analysis, COC procedures will be followed in accordance with MCP-1192, "Chain-of-Custody and Sample Labeling for ER and D&D&D Projects"; MCP-1193, "Handling and Shipping Samples for ER and D&D&D Projects"; and the QAPjP (DOE-ID 2004c). The purpose of the COC is to document the identity of the sample and its handling from the point of collection until laboratory analysis is complete. The COC record is a multiple copy form that serves as a written record of the sample handling. When a sample changes custody, those personnel relinquishing and receiving the sample shall sign a COC record. Each change

Table 4-1. Sample collection and analysis requirements.

Analytes	Sample Container Size and Type	Preservative	Analytical Method	Holding Time	Comments
IRC Laboratory Analyses					
VOCs	Two glass 40-mL VOA vials	4°C	SPME-GC-FID	7 days	No headspace
Ethene, ethane, and methane	Two glass 40-mL VOA vials	4°C and pH<2 w/H ₂ SO ₄	GC-FID	14 days	No headspace
Lactate	One glass 40-mL VOA vial	4°C	Ion chromatography	7 days	Sample filtered through 0.2-µm filter upon collection
Lactose, acetate, propionate, butyrate, isobutyrate, isovalerate, valerate, hexanoate, and formate	One glass 40-mL VOA vial	4°C	GC-FID	7 days	Sample filtered through 0.2-µm filter upon collection; collected in same container as lactate
Field Laboratory Analyses (Priority)					
Iron (1)	250-mL HDPE	None	Hach ^a Method 8146	30 minutes	Must be analyzed immediately; collected in same container as sulfate, phosphate, and ammonia; no headspace
Phosphate (2)	250-mL HDPE	4°C	Hach Method 8048	24 hours	Collected in same container as iron, ammonia, and sulfate
Alkalinity (3)	125-mL HDPE	4°C	Hach Method 8203	24 hours	_
Sulfate (4)	250-mL HDPE	4°C	Hach Method 8051	24 hours	Collected in same container as iron, phosphate, and ammonia
Nitrogen, ammonia, low range (5)	250-mL HDPE	4°C	Hach Method 10023	24 hours	Collected in same container as iron, phosphate, and sulfate
Nitrogen, ammonia, high range (6)	250-mL HDPE	4°C	Hach Method 10031	24 hours	Collected in same container as iron, phosphate, and sulfate

Table 4-1. (continued).

Analytes	Sample Container Size and Type	Preservative	Analytical Method	Holding Time	Comments
COD (7)	One glass 40-mL VOA vial	4°C	Hach Method 10067	28 days	Initial sample preparation within 1 hour of arrival at field laboratory (follows phosphate for priority)
Off-Site Laboratory Analyses					
VOCs	Three glass 40-mL VOA vials	4°C and pH<2 w/H ₂ SO ₄ (8260B) or HCl (524.2)	SW-846 8260B ^b or EPA 524.2 ^c (see Table 3-2)	14 days	No headspace
Tritium	1–125-mL HDPE	None	Liquid scintillation counting	180 days	_
Gamma screen	1–540-mL HDPE	None	Gamma spectroscopy	NA	Required for samples from TSF-05, TAN-25, TAN-26, TAN-31, and TAN-1859 prior to shipment off-Site

a. Hach Company, P.O. Box 389, Loveland, Colorado, 80539-0389, telephone: (800) 227-4224

COD = chemical oxygen demand

EPA = U.S. Environmental Protection Agency

GC-FID = gas chromatography-flame ionization detection

HDPE = high-density polyethylene

NA = not applicable

SPME = solid-phase micro extraction

VOA = volatile organic analysis VOC = volatile organic compound

b. "Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)" (EPA 1996)

c. "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry" (EPA 1992)

of possession will be documented. The COC procedures will begin immediately after sample collection. The sample ID number, date, and time will be entered on the COC form the day of sample collection. Sample bottles will be stored in a secured area accessible only to the field team members. A COC will not be initiated for those samples that are analyzed on-Site in the field laboratory unless specified by the FTL or FLL, since these samples will not leave the custody of the field team members.

4.1.4 Transportation of Samples

Samples will be transported in accordance with regulations issued by the U.S. Department of Transportation (49 CFR 171 through 178) and EPA sample handling, packaging, and shipping methods (40 CFR 261.4[d] and [e]). All samples will be packaged in accordance with the requirements set forth in MCP-1192 and the governing TOS.

4.1.5 Radiological Screening

Samples collected from the TAN-25, TAN-26, TAN-31, TAN-1859, and TSF-05 wells must be surveyed using gamma spectroscopy prior to analysis or shipment off-Site. Radioactivity in all other wells to be sampled has historically been below levels of concern. Samples collected from other wells may be surveyed using gamma spectroscopy under the direction of the technical lead, FTL, or Operations supervisor.

4.2 Sample Analysis

Sample analysis will be conducted using three analytical components (i.e., the on-Site field laboratory, the IRC laboratory, and SAM-appointed off-Site laboratories), depending upon holding time restrictions, analytical capabilities, and quality level requirements. Analytes and the analytical methods to be used for each of the three components are defined in Table 4-1. The QA requirements associated with the activities taking place within each of the three components are described separately in Section 6. The on-Site field laboratory, in addition to providing analytical resources, also is used for sample preparation activities in support of analyses to be conducted at both the IRC and off-Site laboratories. A summary description of the laboratory activities is provided below.

4.2.1 On-Site Field Laboratory Activities

The field laboratory supports ISB project team activities for all three analytical components of the monitoring program. The field laboratory is the center for all on-Site collection activities, including field test kits and multiparameter water-quality instrument data (both in situ and purge data). These activities provide near real-time data for evaluating the performance of the ISB remedy. In addition, the field laboratory is used for coordinating sample delivery to the IRC and for sample shipment to off-Site laboratories, as described in Sections 4.1.1 through 4.1.5. Specific activities that the field laboratory supports include colorimeter operation; digital titrator operation; gross alpha-beta counts; sample preservation, storage, packing, and shipping; multiparameter water-quality instrument deployment, maintenance, standardization, and downloading; and sample bottle preparation and administrative activities.

The FTL, FLL, and field lab technicians will conduct field laboratory operations. The general roles of each are defined in the Health and Safety Plan (ICP 2005a), while specific responsibilities are delineated in the relevant procedure(s). Field laboratory operations and associated equipment are described in TPR-166, "In Situ Bioremediation Field Laboratory Procedure." Multiparameter water-quality instruments will be deployed, operated, and maintained, as specified in TPR-6247, "Operable Unit 1-07B TROLL 9000 Water Quality Probe Operation and Maintenance," for Trolls,

and TPR-6248, "Operable Unit 1-07B Hydrolab Operation and Maintenance," for the Hydrolabs. These procedures will be updated, as required, for the duration of monitoring.

4.2.2 IRC Laboratory Activities

Analysts at the IRC laboratory analyze samples for chloroethene; ethene, ethane, and methane; lactate; and organic acids using the methods listed in Table 4-1. The IRC laboratory operations utilize one to two analysts in support of ISB groundwater monitoring operations. Details regarding analyses conducted at the IRC laboratory are provided in the most recent "Statement of Work Test Area North, Operable Unit 1-07B, Samples to be Analyzed at the INL Research Center" (SOW-2697).

4.2.3 Off-Site Laboratory Activities

Off-Site laboratories analyze samples for chloroethenes and tritium using definitive methods. Specific requirements are defined in the TOS prepared by the INL SAM Program for each analytical services subcontract.

5. DATA MANAGEMENT AND REPORTING

Detailed steps of the data management process are documented in the "Data Management Plan Test Area North, Operable Unit 1-07B" (PLN-1750). This plan identifies project personnel responsibilities for data management activities and addresses processes for compiling data; entering data into the Environmental Data Warehouse, data review and validation, and data access, use, and records.

Reporting requirements for ISB groundwater monitoring results are defined in the *In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B* (DOE-ID 2004a). All ISB groundwater monitoring information will be compiled in the ISB Periodic Report and will be provided to the Agencies (i.e., the U.S. Department of Energy, EPA, and the Idaho Department of Environmental Quality [DEQ]). Information reported will include analytical results, SAP tables, trend charts, QA results, interpretations, and operational changes. The Periodic Report will document progress of the ISB remedy toward meeting the performance criteria and RAOs and shall support agency 5-year reviews.

In addition, quality-assured sampling results will be submitted to the Agencies as they become available, but no later than 120 days after sample collection. Non-quality-assured data that support decision making will be submitted as they become available. Data will be submitted to the Agencies in both electronic and hardcopy formats, as appropriate.

6. QUALITY ASSURANCE

This section presents or references requirements for QA (including field and laboratory QA types and frequencies, precision and accuracy, corrective actions, and reporting) and for analyses performed in support of the OU 1-07B ISB remedial action at the on-Site field laboratory, the IRC laboratory, and off-Site laboratories. The QA will be implemented as specified in this Groundwater Monitoring Plan, the QAPjP (DOE-ID 2004c), and TPR-166, "In Situ Bioremediation Field Laboratory Procedure."

For purposes of this Groundwater Monitoring Plan, laboratory QA measures are those checks that an analyst routinely performs to determine precision and accuracy of the analytical methods and equipment (method error). These checks typically include blanks, standards, duplicates, standard reference materials, and standard additions (matrix spikes). Field QA measures are sample types collected or prepared in the field during sampling and submitted to the laboratory to assess overall data quality of the sampling and analysis program (total measurement error). Field QA sample types include field blanks, trip blanks, and field duplicates. Compliance monitoring at TAN-28 and TAN-30A—and at TAN-1860 and TAN-1861—will be considered separate sampling events; one field blank, one field duplicate, and one trip blank will be collected and analyzed for each respective well pair per sampling event.

Performance evaluation samples may be added to the OU 1-07B ISB Remedial Action QA Program at the discretion of the ISB technical lead or project manager. If implemented, the Performance Evaluation Program will be administered by the INL SAM Program with direction from the ISB technical lead regarding sample type, concentration ranges, frequency, and analytes for each performance period.

Data validation levels, as defined in the QAPjP (DOE-ID 2004c), are identified in Section 6.3 for definitive off-Site analyses only. Data from field laboratory or IRC analyses are not validated.

6.1 Field Laboratory

6.1.1 Laboratory and Field Quality Assurance

Laboratory and field QA for the on-Site field laboratory includes analysis of field blanks, field duplicates, standards, and standard additions (matrix spikes). Frequencies for field laboratory QA measures are specified in Table 6-1. Procedures for preparing standards and standard additions, as well as precision and accuracy requirements and corrective actions, are described in TPR-166.

Table 6-1. Field laboratory quality assurance frequency for in situ bioremediation remedial action groundwater monitoring.

Sample Type	Frequency	Comments
Field duplicate	1 per 20 samples ^{a,b}	All samples analyzed at the field lab
Field blank	1 per 20 samples ^{a,b}	All samples analyzed at the field lab
Standard additions	1 per 20 samples	Sulfate, alkalinity, phosphate, and ammonia only
Standards	1 per day of sampling (COD = 1/batch)	Iron, sulfate, phosphate, COD, and ammonia only

a. One sample for all analytes per day if number of monitoring locations is <20

b. One sample per round for compliance monitoring at TAN-28 and TAN-30A; and at TAN-1860 and TAN-1861

COD = chemical oxygen demand

TAN = Test Area North

6.1.2 Reporting

Control charts will be prepared and maintained for each QA parameter and analyte. The QA results will be compiled as described in the "Data Management Plan Test Area North, Operable Unit 1-07B" (PLN-1750). Laboratory QA results and corrective actions will be summarized and reported in the ISB Periodic Report (to be written when results are complete).

6.2 IRC Laboratory

6.2.1 Laboratory and Field Quality Assurance

Laboratory and field QA for the IRC laboratory includes analysis of trip blanks, field blanks, field duplicates, standards, matrix spikes (standard additions), initial calibrations, continuing calibrations, and performance evaluation samples. Table 6-2 presents the frequencies for all IRC field and laboratory QA measures. Precision and accuracy requirements for IRC QA measures, as well as corrective actions, are presented in the most current "Statement of Work for Test Area North, Operable Unit 1-07B, Samples to be Analyzed at the INL Research Center" (SOW-2697).

Table 6-2. IRC laboratory quality assurance frequency for in situ bioremediation remedial action groundwater monitoring.

Sample Type	Frequency	Comments
Trip blank	1 per sample cooler	VOCs, ethene, ethane, and methane only
Field duplicate	1 per 20 samples ^{a,b}	All samples analyzed at the IRC
Field blank	1 per 20 samples ^{a,b}	All samples analyzed at the IRC
Matrix spike/matrix spike duplicate	1 per 20 samples	VOCs, ethene, ethane, and methane only
Initial calibration check	1 per each lot analyzed; 1 per day minimum	All samples analyzed at the IRC
Continuing calibration check	1 per 10 samples	All samples analyzed at the IRC
Performance evaluation samples	In accordance with direction from the ISB technical lead	VOCs only

a. One sample for all analytes per day if number of monitoring locations is $\!<\!20.$

6.2.2 Reporting

The IRC QA results will be compiled as described in the "Data Management Plan Test Area North, Operable Unit 1-07B" (PLN-1750). Control charts will be prepared and maintained for each QA parameter and analyte. Internal QA results and corrective actions will be summarized and reported in the ISB Periodic Report (to be written when results are complete).

b. One sample per round for compliance monitoring at TAN-28 and TAN-30A; and at TAN-1860 and TAN-1861.

INL = Idaho National Laboratory

IRC = INL Research Center

ISB = in situ bioremediation

TAN = Test Area North

VOC = volatile organic compound

6.3 Off-Site Laboratories

6.3.1 Laboratory and Field Quality Assurance

Laboratory QA for the off-Site laboratories includes blanks, duplicates, standards, and standard additions (matrix spikes). Off-Site laboratory QA requirements established in the QAPjP (DOE-ID 2004c) are based on definitive data requirements (Table 6-3). Field QA for the off-Site laboratories includes field blanks, trip blanks, and field duplicates. Table 6-4 specifies the frequencies for field QA analyses.

Table 6-3. Off-Site laboratory quality assurance requirements for definitive data.^a

Quality Assurance Parameter	Acceptable Range ^b	Parameter Calculated
Precision		
Duplicates	TCE: ±14%	Relative percent difference
Accuracy		
Standards	TCE: 71–120%	% recovery
Matrix spikes	TCE: 71–120%	% recovery
Completeness		
Definitive confirmation	90%	% complete
Compliance monitoring	100%	% complete

a. As defined by the QAPjP (DOE-ID 2004c)

Table 6-4. Field quality-assurance frequencies for definitive data.

Sample Type	Frequency	Comments
Field duplicate	1 per 20 samples ^{a,b}	All off-Site samples
Field blank	1 per 20 samples ^{a,b}	All off-Site samples
Trip blanks	1 per sample cooler	Off-Site VOCs only
Definitive confirmation	Semiannual/annual performance sampling round	Off-Site VOCs only

a. One sample for all analytes per day if the number of monitoring locations is <20

6.3.2 Corrective Actions

The SAM Program establishes corrective action requirements in the TOS for the performing laboratory.

b. Other analytes for which definitive data will be collected have no quality control requirements specified in the QAPjP (DOE-ID 2004c).

DOE-ID = U.S. Department of Energy Idaho Operations Office

QAPjP = quality assurance project plan

TCE = trichloroethene

b. One sample per round for compliance monitoring at TAN-28 and TAN-30A; and at TAN-1860 and TAN-1861

TAN = Test Area North

VOC = volatile organic compound

6.3.3 Reporting

Laboratory reporting requirements for off-Site laboratory QA are established by the SAM Program in the TOS for the performing laboratory. Off-Site laboratory QA results will be compiled as described in the "Data Management Plan for Test Area North, Operable Unit 1-07B" (PLN-1750) and will be summarized and reported in the ISB Periodic Report (to be written when results are complete).

6.3.4 Data Validation

Definitive data from off-Site analyses will be validated to Level A, as specified in the QAPjP (DOE-ID 2004c).

7. REFERENCES

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- 49 CFR 177, 2005, "Carriage by Public Highway," *Code of Federal Regulations*, Office of the Federal Register, October 2005.
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- DOE-ID, 2004b, *In Situ Bioremediation Operations and Maintenance Plan for Test Area North, Operable Unit 1-07B*, DOE/ID-11012, Rev. 2, U.S. Department of Energy Idaho Operations Office, July 2004.
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Appendix A

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan (Rev. 2, Draft)

Appendix A

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan (Rev. 2, Draft)

Table A-1. EPA Region 10 comments on the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Doc/Sect.	Comment	Resolution
EPA-1.	2	INEEL/EXT-2002-00779, Rev. 2 Figure 1-1	The "End of Remedial Action" requires definition, as "Institutional Controls" are a component of the remedial action.	Comment incorporated. The wording will be revised to "End of Active ISB RA," and Institutional Controls will be deleted from Figure 1-1. The criterion "RAOs met" will be added for Decision #4.
EPA-2.		INEEL/EXT-2002-00779, Rev. 2 General	Given the nature of the hot spot, a geological cross section of the area within 250 ft downgradient and crossgradient of TSF-05 would be helpful.	Comment noted. The Site Conceptual Model Reports are referenced in Section 1.1, last paragraph, as sources for this type of information.
EPA-3.	21	INEEL/EXT-2002-00779, Rev. 2 Table 6-1	For this project, the field blank should be 1/day minimum and 1/20 if a large number of samples are collected in a day.	Comment incorporated.
EPA-4.	21	INEEL/EXT-2002-00779, Rev. 2 Table 6-1	Are any equipment rinsate blanks planned?	Comment noted. No equipment rinsates are planned since all wells will have dedicated pumps and no decon between wells is required.
EPA-5.	21	INEEL/EXT-2002-00779, Rev. 2 Section 6.2.2	What about reporting to Agencies (e.g., submittal of sampling data in accordance with FFA/CO ^a Section 19.1)?	Comment incorporated. The Groundwater Monitoring Plan Section 5 will be revised to state that quality assured data will be submitted as they become available, but no later than 120 days after sample collection; and that non-quality assured data supporting decision-making will be submitted as it becomes available; as per FFA/CO ^a Sections 19.1 and 19.2.

Table A-1. (continued).

Comment No.	Page No.	Doc/Sect.	Comment	Resolution
EPA-6.	22	INEEL/EXT-2002-00779, Rev. 2 Table 6-3	It would be helpful to further refine the definition of "definitive;" for example, are any data considered "critical" which require 100% completeness?	Comment incorporated. Compliance data will be stated to require 100% completeness.
EPA-7.	22	INEEL/EXT-2002-00779, Rev. 2 Section 6.3.3	What about reporting to Agencies (e.g., submittal of sampling data in accordance with FFA/CO ^a Section 19.1)?	Comment incorporated; please see the response to EPA Comment #5.

a. DOE-ID, 1991, Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory, Administrative Record No. 1088-06-29-120, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Health and Welfare, December 4, 1991.

EPA = U.S. Environmental Protection Agency

EXT = external (type of report designation)
FFA/CO = Federal Facility Agreement and Consent Order

ISB = in situ bioremediation

RA = remedial action

RAO = remedial action objective

Table A-2. DEQ comments on the In Situ Bioremediation Groundwater Monitoring Plan.

Comment	Page			diation Groundwater Womtoring Flan.	
No.	No.	Section	Location	Comment	Resolution
DEQ-1.	1	Section 1	4th Bullet, Last Sentence	To be consistent with the remainder of the document, this sentence should state that this phase of the operations would be complete when VOC concentrations are below MCLs.	Comment noted. As stated on p. 4 for Decision 4, the compliance criteria for long-term operations, which will be defined when the active ISB RA is completed, will be specified in the ISB Remedial Action Report.
DEQ-2.	4	Section 1	Decisions 1-4	None of these decision points include evaluation of radionuclides, especially Sr-90 or Cs-137. Although the current thought is that these radionuclides will adhere to the natural substrate, this assumption must be verified through this monitoring plan.	These contaminants of concern will be added as a monitoring requirement for MNA covered under the ISB sampling regime. As noted in EPA-1, the requirements, goals, and objectives for radionuclides will be defined in the MNA Work Plan ^a
DEQ-3.	4	Section 1	2nd Paragraph	We should identify in this document what types of data and how this data will fulfill other remedies' respective data needs.	Comment incorporated. The ISB RAWP ^b will include a crosswalk showing how performance monitoring/compliance monitoring (PM/CM) for each remedy component supports the overall remedy monitoring requirements, and thereby other remedy component requirements.
DEQ-4.	9	Section 3	Tables 3-1 and 3-2	Applicable radionuclides need to be added to these tables.	Comment incorporated.
DEQ-5.	11	Section 3.3		As this paragraph currently reads, the purge water will be packaged and handled as hazardous waste. Either delete purge from the list of waste or state that purge water and developments may be treated through the NPTF and reinjected.	Comment incorporated. The text will be revised to read "all wasteswill be managed in compliance with the Waste Management Plan".c

Table A-2. (continued).

Comment No.	Page No.	Section	Location	Comment	Resolution
No. No. DEQ-6. 12 DEQ-7. 13 DEQ-8. 17	Section 3.1	Table 3-3	A Method Detection Limit (MDL) is presented for all constituents and analytical methods except for cis-DCE. Please provide an MDL to complete this table. If the annual definitive confirmation data is the final decision mechanism to determine compliance with MCLs or to be used as a risk base decision-making tool, the MDLs are too high. This is especially important considering a ±14% definitive data criteria for TCE, as per Table 6-2. An MDL of 3 or even 4 μg/L will eliminate a lot of future questions. The MCL for vinyl chloride is 2 μg/L; therefore, the MDL for Method 8260B must also be 2 μg/L or less. Add Sr-90 and Cs-137 to the radionuclide list.	a) Comment incorporated. b) Comment noted. The annual definitive confirmation data are not used for determining compliance with MCLs nor for risk assessment, but are used to upgrade the quality of the VOC SPME-GC-FID data to "screening with definitive confirmation" as per the QAPjP ^d definition. Therefore, MCLs need not match MDLs. c) Comment incorporated, Sr-90 and Cs-137 will be added to the analyte list.	
DEQ-7.	13	Ibid.		Please correct PH to pH, the standard designation. Specific conductivity is usually reported as microS/cm (µS/cm) and not as milliS/cm (mS/com). Please verify the units intended for this parameter and correct as needed.	a) Comment incorporated. b) millisiemens (mS) per cm are the correct units for the in situ water quality probes used.
DEQ-8.	17	Section 4.1.5		It may be worth noting potential wells that the FTL may identify for gamma spectrometry prior to shipment. One well that would be considered is TAN-37. Obviously, there are reasons to not make this identification but it is worth discussion between the Agencies.	Comment noted.
DEQ-9.	21	Section 6.1.1	Table 6-1	This table only calls for 5% duplicate sampling for the field laboratory. Justification is needed to use less than the 10% duplicate sampling called for in the site-wide QAPjP ^a . Please provide this justification or increase the number of duplicate samples.	Comment noted. The duplicate frequency of 1 per 20 samples (5%) is the minimum specified in Table 1-5 of the QAPjP ^d . Additionally, a minimum duplicate frequency of 1/day will be added.
DEQ-10.	21	Section 6.3.1		It is not clear from this description if the QAPjP ^d will be followed for the number of duplicate samples that will be collected and analyzed. It appears from Appendix A that the percentage is less than 10%, but greater than 20%. Please clarify the level of QA samples that will be collected and analyzed.	Comment noted. Please see response to IDHW Comment #9.

Table A-2. (continued).

Comment No.	Page No.	Section	Location	Comment	Resolution
DEQ-11.	B-1	Appendix B		The values presented for "Sampling Depth" are not consistent with the depths presented for "Length of discharge line" and "Screened interval(s)." For instance, the sampling depth for TSF-05A is stated as 235 ft but the discharge line is 275 ft. TAN-25 is shown with a sampling depth of 257 ft but the discharge line is only 218 ft. Please verify the entries in this table and correct as needed. If there is a reason the numbers do not match, please provide a footnote to explain how the numbers work.	

- a. Orr, Brennon R., Joseph S. Rothermel, and Aran T. Armstrong, 2003, Monitored Natural Attenuation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B, DOE/ID-111055, Rev. 0, U.S. Department of Energy Idaho Operations Office, June 2003.
- b. DOE-ID, 2003, In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B, DOE/ID-11015, Rev. 1, U.S. Department of Energy Idaho Operations Office, January 2003.
- c. INEEL, 1999, Waste Management Plan for Test Area North Final Groundwater Remediation, OU 1-07B, INEEL/EXT-98-00267, Rev. 4, Idaho National Engineering and Environmental Laboratory, April 1999.
- d. DOE-ID, 2004, Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Deactivation, Decontamination, and Decommissioning, DOE/ID-10587, Rev. 8, U.S. Department of Energy Idaho Operations Office, March 2004.
- DCE = dichloroethene
- DEQ = [Idaho] Department of Environmental Quality
- EPA = Environmental Protection Agency
- FTL = field team leader
- GC-FID = gas chromatography flame ionization detector
- IDHW = Idaho Department of Health and Welfare
- ISB = in situ bioremediation
- MCL = maximum contaminant level
- MDL = method detection limit
- MNA = monitored natural attenuation
- NPTF = New Pump and Treat Facility
- QA = quality assurance
- QAPjP = Quality Assurance Project Plan
- RA = remedial action
- RAWP = Remedial Action Work Plan
- SPME = solid phase micro extraction
- TAN = Test Area North
- TCE = trichloroethene
- TSF = Technical Support Facility
- VOC = volatile organic compound

Appendix B

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan (Rev. 2, Draft Final)

Appendix B

Agency Comments and Resolutions for the In Situ Bioremediation Groundwater Monitoring Plan (Rev. 2, Draft Final)

Table B-1. EPA Region 10 Comments for the In Situ Bioremediation Groundwater Monitoring Plan.

			C	
Comment No.	Page No.	Doc/Section	Comment	Resolution
EPA-1.	10	INEEL/EXT-2002-00779, Rev. 2 Table 3-2	There should be a footnote identifying that the long-term compliance monitoring sampling strategy will be submitted in the Remedial Action Report, a primary document.	Agree; footnote added.
EPA-2.	20	INEEL/EXT-2002-00779, Rev. 2 Section 5	Please include that the Agencies will be provided with sampling results in both written and electronic format (e.g., Excel spreadsheet).	Agree.
EPA = U.S. En	vironmental I	Protection Agency		

Table B-2. DEQ Comments for the In Situ Bioremediation Groundwater Monitoring Plan.

Comment No.	Page No.	Doc/Section	Comment	Resolution
DEQ-1.	9	INEEL/EXT-2002-00779, Rev. 2 Section 3, Tables 3-1 & 3-2	Applicable radionuclides need to be added to these tables. Sr-90 and Cs-137 were added to Table 3-1, however, only for monitoring well TAN-29 on a quarterly basis. It appears to DEQ that sampling a number of monitoring wells along the suspected axis of the plume will provide trend data, which will be much more useful than the proposed sampling routine.	A crosswalk table has been added to Section 2 of the ISB RAWP (Table 2-2), which maps the different monitoring requirements to the remedial component for which it is applicable. TAN-29 monitoring has been added as a placeholder until the NPTF contingent/upgradient monitoring strategy is in place.
DEQ-2.		INEEL/EXT-2002-00779, Rev. 2 Section 3, Table 3-1	TAN-27's location near the outer edge of the plume makes it a valuable monitoring well. Whether inadvertently left out of Table 3-1 or not, it should be added.	Agree; comment incorporated.
DEQ-3.		INEEL/EXT-2002-00779, Rev. 2 Appendix D, Table D-1	Some values presented for "Sampling Depth" are not consistent with the depths presented for "Length of discharge line" and "Screened interval(s)." Please verify the entries in this table and correct as needed. If there is a reason the numbers do not match, please provide a footnote to explain how the numbers work, as was done for TSF-05.1 Monitoring wells TSF-05A and TAN-25 were corrected; however, there are still several wells in the table where the sampling depth and discharge	Agree; comment incorporated.

a. DOE-ID, 2003, In Situ Bioremediation Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B, DOE/ID-11015, Rev. 1, U.S. Department of Energy Idaho Operations Office, January 2003.

DEQ = [Idaho] Department of Environmental Quality

ISB = in situ bioremediation

NPTF = New Pump and Treat Facility

RAWP = Remedial Action Work Plan

TAN = Test Area North

TSF = Technical Support Facility

Appendix C

Example Sampling and Analysis Plan Tables

Plan Table Number: INTERIM_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

	ţ	Sample Description					Sample L	.ocetion		L						nter Ar	nalysia	Тура	(AT) a	nd Quar	ntity Req	uested	1		
ampling ctivity	Sample Type	Sample Mairix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3		AT5 A	-	+	AT9	AT10	\vdash	VE	T13 AT1	4 AT15	5 AT18 /	AT17 AT	18 ATS
INM000	REG	GROUND WATER	GRAB	<u> </u>	11	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	1	-	1	-	1	1	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	VE		+	₩	+	+
INMO01	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	\vdash	+	+	\vdash		1	\vdash	+	十	╀	₩	╬	+
INMO02	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-25 (1117)	218	1,	1	1	┤┤	+	1	┝	ļ .	· ,	\dashv	+	+	╀	╁┼	+	+-
INM003	REG	GROUND WATER	GRAB	-	11	TAN	MONITORING WELL	TAN-20 (1118)	389	1	1	1	\vdash	+	╁	┝	1	1	H	+	+	┼-	╀┤	+-	╫
INM004	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	\vdash	+	╁	\vdash	1	1	1	+	+	╁	₩	+	╀
NMD05	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-28 (1008)	240	+	1	1	Н		┿	┢	1		-+	1	+	┼	₩	+	╁
INMOGE	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-29 (1010)	253	+-	1	1	H	+	+	┝	-	1	+	1	+	┼	₩	+	+
INMO07	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	+	1	1	H	+	+	\vdash	1	1	╗	+	+	╁	₩	+	+
BOOMINI	REGIQC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-31 (1219)	258	2	2	2	2	╬	1.	├-	2	2	2	+	+	⊬	┼╾┼	+	┼-
INMO09	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37A (1163)	240	+	1	1		+	┼	\vdash	1	1	1	-	+-	╀	₩	+	┿
NM010	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37B (1183)	272	+	1	1	\vdash	1	┿	┞	1	1 :	-}-	+	+	╁┈	\vdash	- -	╂
NM011	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37C (1183)	375	1	1	1	╁	+	+	1	1	_	+	+	+	\vdash	⊣	+	╀
NM012	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	_	\dashv	+	+	 	1	_	+	+	+	\vdash	\dashv	+	+
NM013	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-D2 (339)	241	1	,	1	1	\dashv		-	1	1	+	+	╄	₩	\vdash	+	╀╌
INM014	οc	GROUND WATER	FBLK		11	TAN	FIELD BLANK	QC .	NA NA	1	1	1	\dashv	+	╁╌	Н	+	Ť	┧	+	+	╁╌	╆┼	+	╁
INM015	QC	GROUND WATER	TBLK		11	TAN	TRIP BLANK	ac -	NA -	+	Н		2	+	╀╌	Н	$\dot{\dashv}$	H	2	+	+	┯	╁	+	╁
				1	_					┪┈	Н		-	+	╁	Н	-		┧	+	+	┼┤	┝╌┼	+	╄
Alkalin Analys Chemi			he festalix of	naracters of	the sample klent		The complete sample identification ATT1: VOCs (TAL) ATT12: VOCs (TAL) - MS/MSD ATT13: ATT14:	number (10 characters) wid appe	ar on Reid guidence for	ms and	sample	_	Commi	TAL) - v 2-dichk	rosthen	8				_	hene, cis	⊱1,2-di	chioroef	hene, an	d
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Fleid S	itandard Addition	- QC					KT16:				Samples will be sent to IRC except tritum which will be shipped to an off-site lab														
	a Screen		_				AT17:					_	Field \$1	endard	ddilon	will on	y be c	olect	d in mo	nins wh	en a lac	tate inj	action h	s not be	en do
_	Microbiological Analysis AT18:						NT18:			Field Standard Addition will only be collected in months when a lectate injection has not been done. TAN-37C microbiological sample is for an LDRD project at IRC															
Microb		AT19:									77117 01	O 11.102.0	on the same	a oca i	NO 10 1	u a: ,	UNU P	Oject al	IRC				_		
Microb	nate/Butyrate/Ace	tate/Lactate					LT20:				_	-									_				

Plan Table Number: INTERIM_MONTHLY

DRAFT

Sampler: Carroll, R. E.

SAP Number: INEEL/EXT-2002-00779 Date: 10/17/2002

Plan Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION CHAIM - INTERIM MONTHLY (PM)

Project Manager: NELSON, L. O.

	3	ample Description					Sample	Location		Γ	_					En	ter An	alysis	Types (A	T) and	i Quar	tity Req	veste	d			
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4	AT5	ATG	AT7	AT8	AT9	AT10 A	Γ11 A1	[12 A]	13 AT1	4 AT1	5 AT16	AT17 A	T18 AT19	AT20
Activity	Туре	Martx	Тура	Method	Date	Area	Location	Location	(ft)	A1	3.4	C5	EG	E3	F6	R5	мв	1N	R8 V	A V	E			П	T	1	Т
				<u> </u>															\Box	Т	Τ	Т	Π		T		
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.	
AT1: Alkalinity	AT11: VOCs (TAL)	Commente:
AT2: Analysia Suite #1		VOCs (TAL) - vinyl chloride, trichloroethans, tetractrioroethane, cis-1,2-dichloroethane, and
AT3: Chemical Oxygen Demand	AT13:	rans-1,2-dichkrosthene
AT4: Ethane/Ethene/Wethane	AT14:	Field Tests - Analysis Suits #1, alkalinity, and COD
AT5: Ethane/EtheneAllethane - MS/MSO	AT15:	
ATE: Field Standard Addition - QC	ATI6:	Samples will be sent to IRC except tritum which will be shipped to an off-site lab
AT7: Gamma Screen	AT17:	Field Standard Addition will only be collected in months when a lactate injection has not been done -
AT8: Microbiological Analysis	AT18:	
AT9: Propionate/Butyrate/Acetala/Lectala	AT19:	TAN-37C microbiological sample is for an LDRD project at IRC
AT10: Tribura	AT20:	
Analysia Sultes:	Contingencies:	
Analysia Sulta #1: Sulfate, Iron (Inorganic Analysia)		

Plan Table Number: INTERIM_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Cerroll, R. E.

Date: 10/17/2002

Plan Table Revision: 0.0 Project: OU 1-078 ISB REMEDIAL ACTION GWM- INTERIM QUARTERLY (PM)

Project Manager: NELSON, L. O.

SMO Contact: KIRCHNER, D. R.

		Sample Description					Sample I	Location		\vdash					_ =	THE A	-	туры	- forth	and Lix	атпиу	Reque				_
rnpling tivity	Sample Type	Sample Metrix	Coll Type	Sampling Method	Planned Date		Type of		Depth	AT1	┝		\vdash	TS AT	+	┢	+	-	AT11	AT12	AT13	AT14 A	T15 A	T15 AT1	17 AT	18
NS000	REG	GROUND WATER	<u> </u>			Area	Location	Location	(ft)	A1	3A			3 F6	-	R4	MB	1N	RB			VΕ	_	丄	\downarrow	Ц
NS001	REG	GROUND WATER	GRAB	╁┷┤	11	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2	+	1		╙	1	Ц	1	2	\dashv	4-	4	\perp	┛
48001 48002	<u> </u>			 -!	11	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	. 1	2	\perp	1	_	ļ	1		1	2	\dashv	_			
48002 48003	REG	GROUND WATER	GRAB	 		TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2	_	1		L	1	Щ	1	2			丄	\perp	┙
	REG	GROUND WATER	GRAB	 		TAN	MONITORING WELL	TAN-28 (1118)	389	1	Ľ	1	2	\perp	1	L	┖	1	Ц	1	2		\perp	\bot	\perp	
19004	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	Ľ	ᆜ	2	l	丄			1	Ш	1	2	\Box			丄	
5005	REG/QC	GROUND WATER	DUP	ļ!	11	TAN	MONITORING WELL	TAN-26 (1008)	240	2	2	2	4	┸		L	L	2		2	4			\perp	丄	
(5006	REG	GROUND WATER	GRAB	lacksquare	11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	Ŀ	1	2	上	L	1	L	1	1	1	2	\perp			L.	
19007	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	Ľ	1	2					1		1		2	_			
19008	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		1			1		1	2			\Box	Т	
19009	REG	GROUND WATER	GRAB	<u> </u>	11	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1		2	L			1		1	2			Т	Т	
19010	REG	GROUND WATER	GRAB		1.1	TAN	MONITORING WELL	TAN-37B (1183)	272	1	1	1	2		Ι			ŧ		1	2	П			Τ	
19011	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2		Π		1	1		1	2			T	Τ	
19012	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2	T				1		1	2			Τ	Τ	
8 013	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2					-		1	2	T	7	T	T	٦
8014	QC .	GROUND WATER	FBLK		11	TAN	FIELD BLANK	QC	NA.	1	1	1	2		T	1		1	1	寸	2	丁	T	1	\top	٦
19015	QC	GROUND WATER	TBLK		11	TAN	TRIP BLANK	QC .	NA		П		3	T	1						3	十	\top	十	T	_
														十		_			\Box	\dashv	7	十	十	+-	+	_
Akalini Analysi		on this table represents t	he first six c	nameders of	the sample ident		The complete sample Identification AT11: Sr-90 AT12: Tritium AT13: VOCs (TAL)	number (10 characters) will appe	ear on field guidance for	ms and	sample	_	Comme	TAL) - vi			richlor	etten	o, intra	ichlara	ethene), cis-1,	2-dichi	croether	RB, AN	nd
Ethane	Æthens/Wethens	·					AT14: VOC 6 (TAL) - MS/MSD					_	Field Te	sts - An	elysis S	uite #	1, aka	inity, a	nd CO	D	_		_		_	_
	Ethene/Methane						AT15:					_	Spiron	nnine	II be got			. الله م ما		100-1				hene/Ma	_	_
	tandard Addition	<u>-ac</u>					AT16:	·				_	OPE OR	i de la	A DE LAS		वाक	CCBUO	IIS IOT	VC-S I	TAL)	eks con	BINNET	MOTO/AVE	MINAINE	3 3
	Screen						AT17:														_				_	_
Garnes	u Spec Iological Analysis		·				AT18:																	—	—	-
MEGOLE	nate/Butyrate/Ace						-					_									_				_	_
Propion		PURIOU LAICUMO					AT20:																			

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Plan Table Number: INTERIM_QUARTER

SAP Number: INEEU/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 10/17/2002 Plan Table Revision: 0.0 Project: OU 1-078 ISB REMEDIAL ACTION GWM - INTERIM QUARTERLY (PM)

Project Manager: NELSON, L. O.

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	5	ample Description				}	Sample	Location							Er	nter Ar	alysis T	ypas (Al	n) and	Quantity	Requ	ested			
Sampling	Sample	Sample	Coll	Sampling	Planned	<u></u>	Type of	<u> </u>	Depth	AT1	AT2	AT3	AT4 AT	5 ATC	A17	ATB	ATS A	IT10 AT	11 AT1	2 AT13	AT14	AT15	AT15 AT1	AT18	AT19AT2
Activity	Туре	Matrix	Туре	Method	Date	Area	Location	Location	(ft)	AI	за	C5	EG E	Fe	R5	R4	MB	IN RE	R8	VA	VΕ			П	
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The	sampling activity displayed on this table represents the first six characters of the sample identification number.	The cor	npiete sample identification number (10 characters) will appear on field guidance forms and sample labo	Na.
AT1:	Alkelinity	AT11:	3r-90	Comments:
AT2:	Analysis Suite #1	AT12:	Tritium	VOCs (TAL) - vitryl chloride, irichloroethene, latrachioroethene, cls-1,2-dichloroethene, and
AT3:	Chemical Oxygen Demand	AT13:	VOCs (TAL)	trans-1,2-dichloroethene
AT4:	Ethene/Ethens/Methane	AT14;	VOCs (TAL) - MS/MSD	Field Tests - Analysis Sults #1, alkalinity, and COD
ATS:	Ethane/Ethene/Methane - MS/MSD	AT15:		
ATE:	Field Standard Addition - QC	AT16;		Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses
AT7:	Gamma Screen	AT17:		
AT8:	Gamma Spec	AT18:		
AT9:	Microbiological Analysis	AT19:		
AT10	Propionate/Butyrete/Acetate/Lectate	AT20:		
Anai	lysis Sulline:		Contingencies:	
Anal	yals Suite #1: Sulfate, Iron (inorganic Analysis)			
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Plan Table Number: INTERIM_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 104772002 Plan Table Revision: 0.0 Project OU 1-078 ISB REMEDIAL ACTION GWM- INTERIM SEMIANNUAL (PM) Project Manager: NELSON, L.O.

		P MONT I DE DIRECTOR I DE LA COMPONIO.				EMELIAL ACTION GRAM	- INTERIM SEMANNUAL (PM)	Project Manager: NELS	SON, L. Q.	$\overline{}$								_		(IRCHI									_
	;	Sample Description					Sample	Location		-	т	_	1	_		Ente	Ana	alysis '	Турев	(AT)	and Cx	Lan 6ty	Requ	ested		_			_
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3		ATS E3	+	17 A	+	AT9	AT10	\vdash	AT12	AT13		AT15	AT16	AT17	4T18 A	T19AT	2
IN9016	RÉG	GROUND WATER	GRAB	†	11	TAN	MONITORING WELL	T8F-05A (71)	235	1	₩	1	2			<u>~ '</u>	"	****	1		1	2	ΨE		Н	-	\dashv	+	-
IN9017	REG	GROUND WATER	GRAB	†	11	TAN	MONITORING WELL	TSF-05B (71)	270	1	⊢	1	2	-	-	+	+	-	1	Н	Н	2	Н		-	\dashv	\dashv	+	-
IN3018	REG	GROUND WATER	GRAB	†	11	TAN	MONITORING WELL	TAN-25 (1117)	218	1	+	1	2		-	+	+	\dashv	1	Н	1	2	Н	_	\dashv	\dashv	+	+	-
iN8019	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-26 (1118)	389	1	₩	1	2			+	\dashv	\dashv	<u>.</u>	Н	1	2	Н		\dashv	\dashv	-+	+	-
INS020	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (†009)	235	1	÷	,	2	Н	1	+	+	\dashv	-	\vdash	H	2			\dashv	\dashv	+	十	-
INS021	REGIQO	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2		2	4		+	+	+	\dashv	2	┌┤	2	4				\dashv	\dashv	+	_
IN9022	REG	GROUND WATER	GRAB	—	11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	Н.	-	2		+	+	1	\dashv	-	H	1	2	-		ᅱ	\dashv	+	十	-
INS023	REG	GROUND WATER	GRAB	<u> </u>	11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	-	1	2		╁	+	+	┪	1	H	1	ì	2	_	\dashv	+	+	+	-
INS024	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		-	+	+	\dashv	ť	\vdash	1	2	Ĥ		\dashv	+	+	+	-
INS025	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37A (1183)	240	1	1	1	-	2	-	+	†	-	1	H	1	2	\dashv	-	-	\dashv	+	十	-
INS026	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2		\dashv	┰	+	\dashv	1	H	1	2		-	\dashv	\dashv	+	+	-
INS027	REG	GROUND WATER	GRAB	T	11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2	_	\dashv	+	+	7	1	\dashv		2			1	ᅥ	+	+	-
INS02B	REG	GROUND WATER	GRAB		11	TÁN	MONITORING WELL	TAN-10A (348)	233	1	1	ļ ,	2		\dashv	+	$^{+}$	+	1	\dashv	1	2		-	ᅥ	\dashv	+	+	-
INS029	REG	GROUND WATER	GRAB		11	TÀN	MONITORING WELL	TAN-D2 (339)	241	1	1	7	2.		+	╁	+	\dashv	1	Н		2		-	ᅥ	\dashv	+	+	-
INS030	QC	GROUND WATER	FBLK		11	TAN	FIELD BLANK	QC .	NA.	1	1	1	2		╅	+	,	-	1	7	1	2	\dashv	\dashv	\dashv	\dashv	-+	+	-
INS031	oc	GROUND WATER	TBLK		11	TAN	TRIP SLANK	QC .	NA NA	1		-	3	_	+	+	+	+		\dashv	\dashv	3	\dashv		\dashv	-	+	+	-
										╈	Н	H	Н	H	┰	+	+	\dashv		\vdash	\dashv	Ť	_	\dashv	\dashv	-+	+	十	-
: Alkafri 2: Analysi 3: Chemic	ty le Sulles#1 rai Oxygen Dem		file first six d	haracters of	the sample ident		The complete sample identification AT11: Sr-90 Tritium AT13: VOCs (TAL)	number (10 characters) will appe	ar on field guidance for	ns and	sample		Come VOCs trans-	(TAL) 1,2-di	- vizyl c	ene	_					ethen	e, cle-	1,2-dik	hloroe	thene,	and	_	
	Ethene/Methani /Ethene/Methani						AT14: VOCs (TAL) - MS/MSD	·				_	Field	Tests	Analysi	Sulte	#1	林塘	nity, a	nd CO	0_								
	tandard Addition						AT15: AT16:			_		_	Splitu	ample	s will be	collec	ed a	nt aall io	cation	na for 1	VOCs	(TAL)	and E	hane/	Ethene	Meih	ine ana	ilyses	
	a Soreen											_								—		—		_	_			_	
Ta: Gamma	s Spec							_				_	_									_					_		
19: Microbi	ological Analysis	<u> </u>					AT19:					_	_	_						_	—					—		_	
	sale/Butyrale/Ac	tain/Lactain					AT20:					_	\equiv					_				_					_	_	
nalysis Sulles nalysis Sulle		rogen, Phosphata, Sulfat	e iton (inarc	nanic Anake	iet			Contingencies:																					
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Plan Table Number: INTERIM_SEM

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 10/17/2002

Plan Table Revision: 0.0 Project OU 1-078 ISB REMEDIAL ACTION GWM-INTERIM SEMIANNUAL (PM) Project Manager: NELSON, L.O.

	3	ample Description			<u> </u>		Sample	Location		Π		_				nder A	halysis	Types	(AT) ar	d Qua	niky Ro	rguesti	 sd		
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	АТ3	AT4	415 A	T6 AT.	ATE	АТВ	AT10	XT11	T12 A	T13 AT	14 AT	15 AT16	AT17 AT	15 AT19 AT
Activity	Туре	Metrix	Туре	Method	Date	Area	Location	Location	(ft)	A1	3A	C5	EG	E3 F	6 R5	R4	МВ	1N	RB	R8 \	A V	E			
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The comp	olete sample identification number (10 characters) will appear on field guidance forms and sample labels	k
AT1: Alkalinity	AT11:	3r-90	Comments:
AT2: Anathrile Sulle #1	AT12:		VOCe (TAL) - vinyl chloride, trichloroethene, tetrachioroethene, cls-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13:	VOCs (TAL)	trans-1,2-dichloroethene
A74: Ethene/Ethene/Methane	AT14:	VOCs (TAL) - MS/MSD	Field Tests - Analysis Suite #1, alkelinity, and COD
ATS: Ethane/Ethene/Methane - MS/MSD	AT15:		
AT6: Fleld Standard Addition - QC	AT16:		Split samples will be collected at all locations for VOCs (TAL) and Ethens/Ethens/Methane analyses
AT7: Garrana Screen	AT 17:		
AT8; Gamma Spec	AT18:		
AT9: Microbiological Analysis	AT19:		
AT10: Propionale/Butyrate/Acetate/Lactate	AT20:		
Analysis Sulles:		Contingencies:	
Analysis Sullis #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (inorganic Analysis)			
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Sample Location

Plan Table Number: INTERIM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Enter Analysis Types (AT) and Quantity Requested

Date: 11/04/2002

Sample Description

Plan Table Revision: 1.0 Project: OU 1-078 ISB REMEDIAL ACTION GWM-INTERIM ANNUAL (PM)

Project Manager: NELSON, L. O.

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Sampling Activity	Sample	Sample Matrix	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4	AT5	ATO	177	18 A	.T9 A	T10 A	T11 A	.712	4T13 A	.T14 A	AT15 AT	16 AT	17 AT	18 AT19	9AT2
	Тура		Туре	Method	Date	Area	Location	Location	(ft)	A1	JA	C5	EG	E 3	F8 I	₹ 5	24 G	*	IN I	8 B F	₹8	VA	VE					
IAN000	REG	GROUND WATER	GRAB	┞	11/04/2002	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2			1		1	1	Т	╗	2	T		Τ	T	Т	T
IAN001	REG	GROUND WATER	GRAB	ļ	11/04/2002	TAN	MONITORING WELL	TSF-058 (71)	270	1	1	1	2		T	1	Ţ	न	1	Т	ī	2	丁	T	7	1	T	Τ
IAN002	REG	GROUND WATER	GRAB	<u> </u>	11/04/2002	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2	\neg		1	T	1	1	T	1	2	T	\top	┪	T	1	Τ
IAN003	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2			1		1	1	T	1	2	T	\top	Τ	_	T	T
IAN004	REG	GROUND WATER	GRAB	<u> </u>	11/04/2002	TAN	MONITORING WELL	TAN-27 (1009)	(ft) A1 3A C5 EG 23 F8 R5 R4 GA IN RB R8 VA VE														\top	T				
IAN005	REGIOC	GROUND WATER	DUP		11/04/2002	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4		T	1		2	2	T	2	4	\exists	\top	+	T	1	T
IAN006	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2		丁	T	1	1	1	寸	1	2	十	十	\top	T	十	T
IAN007	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-30A (1012)	310	t	1	1	2		1		T	1	1	\top	7	2	\top	\top	T	T	T	Ħ
IAN008	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		_	1	Ť	1	1	\top	1	寸	2	十	\top	Ť	\top	T
IAN009	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37A (1163)	240	258 1 1 1 2 1 1 1 1 1 2 1 240 1 1 1 2 1 1 1 2 1 272 1 1 1 2 1 1 1 2 375 1 1 1 2 1 1 1 2 233 1 1 1 2 1 1 1 2																		
IAN010	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1		2		1	T	†	1	$^{+}$	त	2	十	┪-	+	T	十	T
IAN011	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2	┪	T	1	T	1	1	十	7	2	+	十	+	t	+	┢
IAN012	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		\top	+	Ť	+	1	+	7	2	+	+	+	+	ϯ	Ι-
JAN013	REG	GROUND WATER	GRAB		11/04/2002	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2		1	†	Ť	\dagger	1	十	1	2	$^{+}$	╁	十	İ	╀	H
IAN014	QC	WATER	F8LK		11/04/2002	TAN	FIELD BLANK	88	NA NA	1	1	1	2	\neg	十	+	1	1	1	十	7	2	+	+	+	╁	+-	┢
IAN015	QC .	WATER	TBLK		11/04/2002	TAN	TRIP BLANK	QC .	NA NA	235														┢				
							-			235														H				
The sampling a	civity displayed	on this table represents t	he first six ch	naracters of	the sample ident	fication number.	The complete sample identification	number (10 characters) will assess	399 1 1 1 2 1 1 1 2 2 4 1 1 2 2 4 1 1 2 2 4 1 1 1 1														Ц.					
AT1: Akaina	γ			_			AT11: 8r-90		272																			
	s Sulte #1	·					AT12: Tritium										, trichi	orost	hene,	etach	doroe	thene,	ds-1,2	2-dichlor	roether	ne, and	<u> </u>	
_	al Oxygen Dema						AT13: VOCs (TAL)					_	4014	1,2,482	PU (48)	O IN	_			_	_	_	_					_
	Etherne Methane						AT14: VOCs (TAL) - MS/MSD		·			_	Fleid 1	esis -	Analysi	Sulta	#1, a	k ediná	ly, CO	3	_	=	_					_
_	ElhenerMethane andard Addition			_			AT15:					_	Split s	amples	will be	collea	ed at a	ni loc	ations	for VC	Cs ("	(AL) ar	nd Ethr	ane/Eth	ene/Me	thana	analysi	<u>—</u>
AT7: Gamma			-				AT17:					-									_		_					_
ATS: Gamma	Spec						AT18:	······		_		_						_	_		_		—				_	·
ATB: Gross A	ipha						AT1R:				_	_						_		_	_		_					_
AT10: <u>Propion</u>	ate/Butyrate/Ace	tate/Lactate					AT20:	······							_						_	—						_
Analysis Suites								Contingencies:				_								_							_	
Avianysis Sums :	£1; Ammonia Na	rogen, Phosphete, Sulfate	, Iron (Inorg	anic Analysi	ils)			-																				
																						_						
																						_						
																						_	_		_			_
																												_

Plan Table Number: INTERIM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002

Plan Table Revision: 1.0 Project OU 1-078 ISB REMEDIAL ACTION GWIN-INTERIM ANNUAL (PM)

Project Manager: NELSON, L. O.

	5	Sample Description					Sample	- Location							- 1	Enter A	nalysis	Турес	(AT)	and Qua	ratity i	gednes	bed			
Sampling	Sample	Sample	Coll	Sampli	ng Planned		Type of		Depth	AT1	AT2	AT3	AT4	ATS A	TA BT	7 ATI	ATG	AT10	AT11	AT12 /	T13	1114 A	15 AT1	8 AT17	AT18 AT	T19AT20
Activity	Туре	Matrix	Турч	Method	l Ω ato	Area	Location	Location	(ft)	A1	3A	C5	EG	E3 F	6 R5	R4	GA	1N	RB	R8	VA	VE			1	\top
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			4	ļ	<u> </u>			<u></u>		Ь.	Ш													П		Т
				↓_			<u>. </u>	<u></u>			Ш													П		
			<u> </u>	<u> </u>	_									1	L.								Ţ			
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		-	<u> </u>	_		,															Ι		Τ		Τ	Τ
				ļ. <u>.</u>		 .																	Ţ	П	\top	
				<u> </u>									Т								Т		T		T	

The sampling activity displayed on this table represents the first six characters of the cample identification number.	The co	mplete sample Identification number (10 characters) will appear on field guidance forms and sample labels	
AT1: Akainity	AT11:		Comments:
AT2: Analysis Suite #1	AT12:		VOCs (TAL) - vinyl chloride, trichloroethene, latrachloroethene, cls-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13:	VOCs (TAL)	hans-1,2-dichlorcethens
AT4; Ethano/Ethono/Additione	AT14:	VOCs (TAL) - M9/M9D	Field Tests - Analysia Suite #1, alkalinity, COD
ATS: Ethans/Ethens/Methans - MS/MSD	AT15:		
ATS: Field Standard Addition - QC	AT16:		Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses
AT7: Gamma Screen	AT17:		
AT8: Germa Spec	AT18:		
ATS: Gross Alpha	AT19:		
AT10: Propionalin/Butyrate/Acetate/Lactate	A120:		
Analysis Suites:		Contingencies:	
Analysis Sulls #1: Ammonia Nitrogen, Phosphate, Sulfale, Iron (Inorganic Analysis)			
		<u> </u>	

Plan Table Number: INITIAL_MONTHLY

DRAFT SAP Number: INEEL/EXT-2002-00779

Sampler: Carroll, R. E.

Date: 10/29/2002

Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL MONTHLY (PM)

Project Manager: NELSON, L. O.

		Sample Description					Sample	Location							1	Enter /	Unadya	в Турн	u (AT)) and (Quantity	Requ	ested					
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4	AT6	ATS AT	7 AT	в ат	AT1	AT1	1 AT1	2 AT13	AT14	AT15	AT164A	T17 A	A BIT	⊺19A`	T20
Activity	Туре	Matrix	Туре	Method	Date	Area	Location	Location	(ft)	A1	3A	C5	EG	E3	F6 R5	1N	RE	VA	VΕ	Т	П		П			T		_
IOM000	REG	GROUND WATER	GRAS		11	TAN	MONITORING WELL	T9F-05A (71)	235	1	1	1	1		1	1	,	١,	T	†	\Box		П	T	┪	\dagger	\top	
IOM001	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	1		1	1	1	1	T	T	\sqcap			\top	7	+	十	_
IOM002	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	ī		<u> </u>	1	1	1	T	T	†			\top	┪	\top	\top	_
KOM003	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-26 (1118)	369	1	ī	1	1		1 1	1	1	†	T	T	${}^{\dag}$	_	П	_	1	\top	十	_
KOM004	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	1			1	1	1	T	t	\Box			十	1	\top	十	-
IOM005	REGIQO	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	2			2	2	2	Т	T	\Box	П		T	+	_	\top	_
HOM008	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	ī			1	1	Ţ	Т	T	H		П	\top	7	\top	\top	_
IOM007	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	7		Π"	1	1	T	1	T	\Box	П	H	\top	す	\top	\top	_
iOM008	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (\$219)	258	1	1	1	1		1	1	1	1	┢	T	П			\top	†		+	-
IOM009	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	Г	1		1	1	1	T	T	\Box				1	1	\top	_
IOM010	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	1			1	1	Ī	Т	T	П			\top	T	1	丁	_
IOM011	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	1			1	1	١,	T	T	П		\Box	\top	十	7	\top	_
IOM012	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1			1	1	1	Г	T			ヿ	丁	1	T	_	_
: IOM013	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	1			1	1	1	T	Τ	П		\Box		T		T	_
IOM014	REG	GROUND WATER	GRAB	<u>L</u> .	11	TAN	MONITORING WELL	PMW-1	тво	1	1	1	1			1	1	1	Г	Τ	П			T	7	1	T	
KOM015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBD	1	1	1	1			1	1	1		Τ	П			丁	1	す	T	٦
IOM016	QC .	GROUND WATER	FOLK		11	TAN	FIELD BLANK	oc	NA.	1	1	1	ī			1	1	1		Т	П		T	T	1	7	T	_
AT1: Alkalini AT2: Analysi		on this table represents t	ne first six ci	haracters of	the sample ident			number (10 cheracters) will appe		s end	eampi	• iabe	VOC		- vinyl chi chloroethe		trichic	roethe	110, 1 01	rachib	roethen	e. cis-	1,2-dic	hioroeti	iene, a	and		-
	Ethene/Methane						AT14:				_	_	Field	Testa	Analysis	Suite #	#1, AS	alinity,	and C	hunk	al Oxy	en De	mand	_			_	_
	Ethene-Methane											_	_				_		_	—	—	-		—	_			-
_	tandard Addition Screen	-oc										_	_							_	_						_	_
	Markyrate/Ace	state/Lactate			-							_	_					_			—							-
AT9: Tritium													_							\equiv	_			<u> </u>				_
AT10: VOCs	TAL)						AT20:				_	_		_					—		_				_	-		
Analysis Suite Analysis Suite		(Inorganic Analysis)						Contingencies:																				_
				-		-		_			_								_	_			-					
		· · · · · · · · · · · · · · · · · · ·											_		_	_					_	_	_					
																				_							—	-

Plen Table Number: INITIAL_MONTHLY

DRAFT

Sempler: Carroll, R. E.

SAP Number: INEEL/EXT-2002-00779

Date: 10/29/2002 Plan Table Revision: 0.0 Project: OU 1-078 ISB REMEDIAL ACTION GW - INITIAL MONTHLY (PM)

Project Manager: NELSON, L. O.

1	Sample Description					Sample Location						Enter Analysis Types (AT) and Quantity Requested														_	
Sampling	Sample	Sample	Coll	Sampling	1		Type of		Depth	AT1	AT2	AT3	AT4	AT5	AT6	177	A BTA	T9 A1	10	AT11 AT1	2 AT1	3 AT14	AT15	AT16 A	T17 A1	[18 AT19	AT20
Activity	Туре	Matrix	Туре	Method	Date	Area	Location	Location	(40)	A1	34	C5	EG	E3	F6 1	₹5	IN F	a v	Α.	VE							
IOM017	QC .	GROUND WATER	TBLK	<u> </u>	- 11	TAN	TRIP BLANK	qc	NA.	1			2		1	T	Ŧ		2		Τ		<u> </u>	П	1	1	\Box
											П		П		寸	7	T	7	T		T	1	Г	H	十	\top	Т
		L.,							T	1	П	_	П		十	T	7	†	1		†	\vdash			十	+	-
		i								T	П			寸	十	†	T	+	1	_	✝	-		Н	+	+	┢
		i							<u> </u>	╅	Н		Н	\dashv	+	+	†	+	┪	╅	+	\vdash		H	+	╁	┢
	-					-	·			+-	H	_	Н	\dashv	+	+	+	+	+	+	+	+		\vdash	+	┿	┢
		_							 	+			Н	\dashv	-+	+	+	╈	+	+	┢	\vdash	-	H	+	+	\vdash
				1	 				 	╁	Н		┝─┤	_		+	+	+	+	+	╫			\vdash	+	+	⊬
									 -	╁	H	_	Н	+	+	+	+	+	+	+	╁	H		H	+	+	<u> </u>
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				\vdash	 -		<u> </u>		 	╁	Н		Н	_	4	+	+	1	4	\perp	╄-	Ш	L.,	\sqcup	4	\bot	
<u> </u>								<u> </u>	1	╄.			Ц	_	_	4	4	1	4		\perp	Ш		Ц	┸	ᆚ_	
				<u> </u>						L			Ш				\perp	\perp			<u> </u>	Ш			\perp	\perp	L

The sampling activity displayed on this table represents the final six characters of the sample identification number.	The con	plete sample identification number (10 characters) will appear on field guidance forms and sample (abels.	
AT1: Alkalinty			emments:
AT2: Analysis Suits #1	AT12:		DCa (TAL) - vinyl chloride, inichloroethene, tetrachloroethene, cls-1,2-dichloroethene, and
AT3: Cherrical Oxygen Demand	A†13:		ins-1,2-dichloroethene
AT4: Ethane/Ethene-Methene	AT14:		eld Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
AT5; Ethane/Ethene/Methane - MS/MSO	AT15:		
AT6: Fleid Standard Addition - QC	AT16:	-	
ATT: Germa Screen	AT17:		
ATS: Propionate/Bulynate/Acetate/Lactate	AT18:		
ATO: Trithum	AT19:		
AT10: VOCs(TAL)	AT20:		
Analysis Sulfas:		Contingencies:	
Analysis Sulfe #1; Sulfate, Iron (Inorganic Analysis)			
			· · · · · · · · · · · · · · · · · · ·
· · · · · · · · · · · · · · · · · · ·			

Plan Table Number: INITIAL_QRTLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002

Plan Table Revision: 0.0 Project: OU 1-07B ISB REMEDIAL ACTION GW - INITIAL QUARTERLY (PM)

Project Manager: NELSON, L. O.

				<u>-</u> -		r		Project manager. NECO								•			INGHN	_,,,,,						
	8	Sample Description				Sample Location					Enter Analysis Types (AT) and Quantity Requested															
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling	Planned Date	Area	Type of Location	Location	Depth (ft)	-	H	H	AT4 EG	+	+	+-	╫	AT10	+	T12A1	+	T14 AT	15 AT 16	AT17	AT18 A	T19AT20
IQT000	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05A (71)	235	1	┡	1	2	-	1	1	t	No		2	-	+	+	┦	┝╌╁	+
IQT001	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)	270	+	⊢	-	2	+	+	╀	1	Н	-	2	+	+	╫	$\vdash\vdash$	\vdash	┰
IQT002	REG	GROUND WATER	GRAB	<u> </u>	11	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2	$^+$	+,	+	1	Н	-	2	+	+	十	╁┤	$\vdash +$	+
ICT003	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2	+	1 1	t	1	Н		2	†	╁	+	\vdash	Н	+
(QT004	REG	GROUND WATER	GRAB		- 11	TAN	MONITORING WELL	TAN-27 (1008)	235	1	1	1	\vdash	2	+	†-	1	H	1	2	十	-†-	+	H	\vdash	+
IQT005	REG/QC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4	十	Ť	T	2		2	4	†	\dashv	+	Н	\vdash	+-
IQT006	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2	1	Ť	1	1	1	1	2	†	+	\top	\vdash	一	+
IQT007	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	١,	1	2	1	\top	T	1		1	2	\top	Ť	†	H	丌	\top
800101	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		1	T	1		1	2	十	1	\top		\sqcap	丁
IQT009	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2	T	T	T	1	П	1	2	T	1	十	\Box	T	1
IQT010	REG	GROUND WATER	GRAÐ		11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2	T	1	✝	1	П	1	2	Τ	1	1		十	\top
IQT011	REG	GROUND WATER	GRAB	ļ	11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2		Τ		1		1	2	†		\top	П		\top
IQT012	REG	GROUND WATER	GRAB		- 11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		1		1		1	1	2	\top	17	П	T	\top
1QT013	REG	GROUND WATER	GRAB	<u> </u>	H	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2		T	T	1		1	2	Ť		\top	П	一	\top
IQT014	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2		T	Т	1	П	1	2	T	1	П	П	一	\top
IQTO15	REG	GROUND WATER	GRAB	<u>L</u>	11	TAN	MONITORING WELL	PMW-2	NA NA	1	1	1	2				1		1	2	T	1	П	П	T	
IQT016	QC :	GROUND WATER	FBLK	<u>L</u> .	11	TAN	FIELD BLANK	οc	NA.	1	1	1	2	Т		1	1	1	1	2	T	\top	\top	П	\Box	T

the sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete sample identification number (10 characters) will appear on field guidance forms and sample lab	sig.
AT1: Alkabahy	AT11: Trillum	Comments:
AT2: Analysis Suits #1	AT12: VOCs (TAL)	VOCs (TAL) - vinyl chloride, trichloroethene, letrachloroethene, cis-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13: VOCs (TAL) - MS/MSD	trans-1,2-dichioroethene
AT4: Ethane/Ethene-Methane	AT(4)	Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go
AT5: Ethane/Etherse/Methane - MS/MSD	AT15:	to IRC and the other to the off-site laboratory.
ATB: Field Standard Addition - QC	AT16:	Field Teats - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
AT7: Gamma Screen	AT(7:	Free 1888 - Artsyles Solle F1, Attaining, and Chemical Oxygen Demand
ATB: Gainma Spec	ATI8:	
AT9: Propionate/Bullyrate/Acetate	AT19:	
AT10: Sr-90	AT20:	
Analysis Suites:	Contingencies	
Analysis Sulte #1: Sulfate, Iron (Inorganic Analysis)		
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Plan Table Number: | INITIAL_QRTLY

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002

SAP Number: INEEL/EXT-2002-00779

Plan Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION GW- INITIAL QUARTERLY (PM)

Project Manager: NELSON, L. O.

	ţ	Sample Description					Sample Location									Enter /	nalysis	Types (/	T) an	1 Quan	bly Re	queste	d	*]					
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of				AT2	AT3	AT4	AT5 A	T8 A1	7 AT	ВАТВ	AT10 A	Γ11 A	12 AT	13 AT	14 AT1	5 AT18	AT17 AT:	18 AT 19 AT 2				
Activity	Туре	Matrix	Type	Method	Date	Area .	Location	Location	(m)	A1	ЗА	C5	EG	E3 F	e R	R4	1N	RB F	a \	A VE									
IQT017	o c	GROUND WATER	TBLK		11	TAN	TRIP SLANK	QC .	NA NA	T			3	\top	T	T			†	3	+	T	П		++-				
				<u> </u>						Г				1	丁	T			T	\top		T	1	\top	† †				
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																			T	Τ	T	T	П						
				<u> </u>											Т	Τ		П	Т	Τ	Т	Т			\Box				
	_		<u> </u>						"						Т	I	Γ	П	Т	Т	T	T	П	\top					
			<u> </u>													I						Τ	П						
				<u> </u>															Τ		1	Τ	П						
				<u> </u>	<u> </u>														Τ		Τ	Τ	П		П				
			<u></u>																	Г	Т		П						
L				L	_												Π			Ţ		Τ	П						

The sampling activity displayed on this table represents the first six character	rs of the sample identification number. The co	omplete sample identifica	don number (10 characters) will appear on field gr	quidance forms and sample labels.
AT1; Alkalinity			•	Comments:
AT2: Anahsis Suite #1	AT12:	VOCs (TAL)		VOCa (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cls-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13:	VOCs (TAL) - MS/MS	SD	trans-1,2-dichloroethene
AT4: Ethane/Ethens/Methane	AT14:			Split samples for VOCs (TAL) and Ethano/Ethano/Methane analyses will be collected. One set will go
AT5: Ethere/Ethere/Alethane - MS/MSD	AT15:			to IRC and the other to the off-site laboratory
AT6: Fleki Standard Addition - QC	AT16:	""		
AT7: Gamma Screen	AT17:			
ATB: Germma Spec	AT18:			
ATB: Propionate/Bulyrate/Asstate/Lactate	AT19:			
AT10; Sr-90	AT20:			
Analysis Suites:			Contingencies:	
Analysis Suite #1: Suitate, Iron (Inorganic Analysis)				
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Plan Table Number: INITIAL_SEM

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002

Plan Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION GW - INITIAL SEMBANNUAL (PM)

Project Manager: NELSON, L. O.

		iampie Description					Sample	Location							£	nter Ar	alysis	Types (/	(T) and	Quant	ty Req	beteeu			
Sampling Activity	Sample Type	Sample Mairix	Co# Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	\vdash	├	\vdash	AT4	+-	+	AT8	H	-	+	12 AT	+	AT15	AT16 A	J17 AT:	18 AT19 AT
IQ3000	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05A (71)	235	1		1	2		1	⊢	_	TCD I	1 2	+	+	┼	\vdash	+	++
IQS001	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)	270	+	-	1	2	+	+	├	Η	-	┵	+	╁	╀┈	\vdash	+	++
iQS002	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-25 (1117)	215	+;	-	1	2	+	+	H	-	+	1 3	+	╁┈	H	┵	+	++
IQS003	REG	GROUND WATER	GRAB	1-	11	TAN	MONITORING WELL	TAN-28 (1118)	389	+	H	<u> </u>	2	+	╁	H	+	╬	+	+	╁	┡	\vdash	+	++
IQS004	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	+ +	Ė		2	-	┿	\vdash	+	+	1 2	+	\vdash	\vdash	\vdash	+	++
IQ8005	REGROC	GROUND WATER	DUP	1	11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	<u> </u>	2	+	+	╫	\vdash	2	-	2 4	┿	┼	┝		+	+-+
103006	REG	GROUND WATER	GRAB	H	11	TAN	MONITORING WELL	TAN-29 (1010)	253	+	H	-	7 2		╁	Ι.	1	-, +	1 2	+-	╁	╀╌	\dashv	╀	┿
IQS007	REG	GROUND WATER	GRAB	\vdash	11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	_	1	2	+	╁╌	 	1	- +	+	2	⊢	╁╌	+	+	₩
105008	REG	GROUND WATER	GRAB	 	11	TAN	MONITORING WELL	TAN-31 (1219)	256	+	⊢-	1	2	+	1.		1	+	1 3	+	╁	-	\dashv	+	╫
IQS009	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37A (1183)	240	+		1	2	┿	+	H	+	_	1 2	+-	╁┈	H		╬	╁┿
IQ8010	REG	GROUND WATER	GRAB	1	11	TAN	MONITORING WELL	TAN-37B (1183)	272	+	Н	1	2	+	+	-	+		1	+	╁	-	\vdash	-	╁┼
IQ8011	REG	GROUND WATER	GRA8		11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	Н	1	+	<u>_</u>	╁┈	Н		+	1 2	+	╫	\vdash	+	-	┽╌┼
IQS012	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-10A (348)	233	1	-	1	2	+	╁	Н	1	+	1 2	+	╁	Н	+	+	╀
ICIS013	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2	+-	+	Н	-	+	1 2	+	╁	\vdash	+	+	++
IQ8014	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-1	NA.	1	1	1	2	+	+		7		1 2	┿	\vdash	-	+	+	++
KQ\$015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	NA.	1	1	1	2	十	+		1	+	1 2	╀	╁╌	Н	+	╫	+
Q8016	œ	GROUND WATER	FBLK		11	TAN	FIELD BLANK	QC .	NA NA	١,	Н	1	2	╁	╁		\dashv	.	1 2	+	\vdash	H	+	+	╁┼

The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete eample identification number (10 characters) will appear on field guidence forms and samp	ie labele.
AT1: Alkalisty	AT11: Tritium	Comments:
AT2: Analysis Sulle #1	AT12: VOGs (TAL)	VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3; Chemical Oxygen Demand	AT13: VOCa (TAL) - MS/MBD	trans-1,2-dichloroethene
AT4: Ethane/Ethene/Methane	AT14:	Split samples for VOCs (TAL) and Etherne/Etherne/Nothane analyses will be collected. One set will go
AT5: Ethane/Ethene/Methane - MS/MSD	AT16:	to IRC and the other to the off-eite laboratory.
AT6: Flekt Standard Addition - QC	AT16:	Tour A fair to a second of the
AT7: Gemma Screen	AT17:	Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
AT8: Gamma Spec		
AT9; Proplonate/Butyrate/Acetate/Lactate		
AT10: \$r-90	· · · · · · · · · · · · · · · · · · ·	
Analysis Sulles:	Confingencies:	
Analysis Sulte #1: Ammonia Nifrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)		
		

Plan Table Number: HITTIAL_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002

Plany Table Revision: 0.0 Project OU 1-078 ISB REMEDIAL ACTION GW - INITIAL SEMIANNUAL (PM)

Project Manager: NELSON, L. O.

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	5	ample Description				į	Sample	Location		\vdash	1 1		_			nier A	nalyzi	Types	(AT)	and Qu	enity	Request	ed	_		
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling	Planned Date	Area	Type of		Depth	_		-	+	+	-+-	+	+	1 1	-	┥		AT14 AT	15 AT1	6 AT17	AT18 A	T19AT20
<u> </u>				emin kog	Las	744	Location	Location	(f t)	A1	34	C5	EG I	E3 F	6 R6	R4	18	RB	R8	VA	VΕ					
IQS017	oc	GROUND WATER	TBLK		11	TAN	TRIP SLANK	90	NA.		H		3			I		П		3				M	T	7
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The com	plets sample identification number (10 characters) will appear on field guidance forms and sample lab	wh.
AT1; Alkalinity		Tritium;	Comments:
AT2: Analysis Suite #1	AT12:	VOCs (TAL)	VOCs (TAL) - vinyl chloride, trichtoroethene, tetrachloroethene, cis-1,2-dichtoroethene, and
AT3: Chemical Oxygen Demand	AT13:	VOCs (TAL) - MS/MSD	trans-1,2-dichloroethene
AT4: Ethane/Ethono/Melhane	AT14:		Split samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go
ATS; Ethane/Ethene/Nethane - MS/MSO	AT15:		to IRC and the other to the off-site laboratory.
AT6: Field Standard Addition - QC	AT16:		
AT7: Gwmma Screen	AT17:		Field Tests - Analysis Sulfe #1, Akalinity, and Chemical Oxygen Demand
ATB: Gamma Spec	AT18:		
ATG: Propionate/Butyrate/Acetale/Lectale	AT19:		
AT10: 9-40	AT20:		
Artalysis Sulles:		Contingencies:	
Analysis Suite #1; Ammonia Hitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)			
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Plan Table Number: INITIAL_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Cerroll, R. E.

Date: 11/04/2002

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Pism Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION GW - INITIAL ANNUAL (PM)

Project Manager: NELSON, L. O.

	8	ample Description					Sample L	ocation								Enter /	Inalysis	Тура	(AT)	■nd Qu	entity	Reques	ted		
iampling ictivity	Sample Туре	Sample Matrix	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4	AT5	176 AT	7 AT	AT9	AT10	AT11	AT12	AT13	AT14 A	T15 AT1	BAT17	AT18 AT19
			Туре	Method	Date	Area	Location	Location	(ft)	Af	34	C5	EG	E3	F6 R	R4	GA	1N	RB	R6	VA	VE			
IAN016	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2		7	Т	1	1	П	1	2	T		T	
IAN017	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2		٦,		1	1		1	2	寸	\top	\vdash	
AN018	REG	GROUND WATER	GRAB		Ħ	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2		7	T	1	1	H	1	7	2	_	H	
N019	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-26 (1118)	369	1	1	1	2	\top	十,	T	1	1	П	7	2	十	+	1	
AN020	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2	十	\top	T	\vdash	1	П	7	2	\top	十		\vdash
AN021	REGIQC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4	十	\top	Ť	2	2	H	2	4	+	+	t	
NO22	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2	十	+	1	1	1	1	1	2	+	╁	H	+
N023	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		+	十	\vdash	1	Н	1	2	-+	+	┼-	\Box
VN024	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1		2	1	╈	1	1	H	1	2	╁	╁		
MO25	REG	GROUND WATER	GRAB		H	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	7	2	7	十	+	t	1		1	2	\top	+	├-	
N028	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	7	2	\top	_	\dagger	T	1	\vdash	╗	2	_	+-	H	\dashv
AN027	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2	寸	\top	t	T	1	\vdash	1	2	十	+	\vdash	
N026	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2	+	十	t	t	1		1	2	-+	T	┢╌	
N029	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2	十	1	t	ऻ—	1		1	2	+	+	\vdash	+-
NO30	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-1	NA	1	1	1	2	7	+	T		1	-	1	2	+	╁	\vdash	
NO31	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-2	NA NA	1	1	1	2	T	╅	t	╁	1	Н	1	2	+	╁	\vdash	
JN032	OC.	GROUND WATER	FBLK		11	TAN	FIELD BLANK	QC	NA.	1	1	1	2	\dashv	+	۲,	1	1		7	2	+	+	\vdash	\dashv

The sampling activity displayed on this table represents the first six characters of the sample identification number.	The co	implete sample identification number (10 characters) will appear on field guidar	ice forms and sample labels,
AT1: Alkalinity	AT11:		Comments:
AT2: Analysis Sulfa #1	AT12:		VOCs (TAL) - vinyl chloride, inichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13:	VOCs (TAL)	Itans-1,2-dichlorosthene
AT4: Ethans/EthensAlethans	AT14:	VOCa (TAL) - MS/MSD	Spit samples for VOCs (TAL) and Ethane/Ethane/Methane analyses will be collected. One set will g
AT5: Ethene/Ethene/Alethume - MS/MSD	 AT15:		to IRC and the other to the off-site imboratory.
AT6: Field Standard Addition - QC	 AT16:		Court Tark Association Section 1
AT7: Gemma Screen	- AT17:		Field Tests - Analysis Suite #1, Alkalinky, and Chemical Oxygen Demand
AT8: Gamma Spec	– AT(8:		
ATB: Gross Alpha	- AT19:		
AT10: Propionate/Butyrate/Acetate/Lactate	AT20 [.]		·
Analysis Sulfee;	•	Contingencies;	
Analysis Suite #1: Ammonia httrogen, Phosphate, Suitate, Iron (Inorganic Analysis)			
			
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			······································

Plan Table Number: INTTAL_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002 Plan Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION GW - INITUAL ANNUAL (PM)

Project Manager: NELSON, L. O.

		**			_		***																		
	,	Sample Description			-		Sample	Location							Er	tter Ar	uniyada 1	ypes (AT) and C	uaniin	/ Requ	betse			
Sampling	Sample	Sample	Cell	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4 AT	5 ATI	A17	8TA	AT9	AT10 AT1	1 AT1:	AY13	AT14	AT15	AT18 AT	17 AT18	AT19AT2
Activity	Туре	Matrix	Тура	Method	Date	Area	Location	Location	(17)	A1	3А	C5	EG E	3 Fe	R5	R4	GA	IN RE	Rea	VA	VΕ		Π	Т	
IAN033	QC .	GROUND WATER	TBLK		11	TAN	TRIP BLANK	QC .	NA.		Π		3	T	1					3			\top	\top	
										T	П	\neg		1			П			Т	П	寸		T	\Box
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The o	implete sample identification number (10 characters) will appear on field guidance forms and sample labe	le,
AT1: Alkalinity	AT11:	9r-90	Comments:
AT2: Analysis Sulfia #1	AT12:	Tritum	VCCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13:	VOCs (TAL)	trans-1,2-dichicroethene
AT4: Ethene/Ethene/Methane	AT14:	VOCs (TAL) - MSAMSD	Spit samples for VOCs (TAL) and Ethane/Ethene/Methane analyses will be collected. One set will go
ATS: Ethana/Ethana/Makhane - MS/MSD	AT15;		to IRC and the other to the off-elle laboratory.
AT6: Field Standard Addition - QC	AT18:		Field Texts - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
AT7: Germa Screen	AT17:		THE TOTAL PROJECT COMPT, ASSEMBLY, and Greeness Chygen Delibers
ATS: Gamma Spec	AT18:		
AT9: Gross Alpha	AT19:		
AT10: Propionate/Butyrate/Acetale/Lactale	AT20:		
Analysis Suites:		Contingencies:	
Analysis Sullis #1; Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)			
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Plan Table Number: INIT_COMPLIANCE

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002

Plan Table Revision: 0.0 Project OU 1-078 ISB REMEDIAL ACTION GW - INITIAL COMPLIANCE - QUART Project Manager: NELSON, L. O.

					T		·										_									
	5	ample Description					Sample i	ocation		L						Enter	Analysi	в Туре	e (AT) e	and Qua	ntity Re	quede	1			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Oate	Area	Type of Location	Location	Depth	—	+	┼	AT4	AT5	A STA	7 A1	в ате	AT10	AT11	AT12 A	T13 AT	14 AT1	5 AT16	AT17 A	T18 AT1	19 AT20
<u> </u>			<u> </u>	-				Cocation	(#)		VE	ļ	Ш		\downarrow						╧		Ш	\perp		
100000	REG/QC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	242	2														П		
IDC001	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	313		1		П			Т					Т	1	\Box	T	T	T
100002	QC	GROUND WATER	FBLK		11	TAN	FIELD BLANK	00	NA.	1	T		П		T			Т			T	T	П	\top	十	1
IOC003	QC	GROUND WATER	TBLK		- 11	TAN	TRIP BLANK	QC	NA.	- 1		Г	П	T	\top	T	1	†	H	_	\top	┪	\Box	十	+	+
					_					1	Τ	T	П	7	十	T	1	\vdash	П	_	\top	╁	Н	十	十	十
										\top	✝		H		十	†	t	╈	H	\dashv	+	+	╅┪	\pm	十	十
									†	1-	Η	T	Н	1	+	$^{+}$	†	t		\dashv	十	+-	H	十	十	+
									· · · · · · · · · · · · · · · · · · ·	+	H	H	H	+	\top	十	✝	┢	H	十	+	+	╁┉┪	+	+	╁
							-			+	┼┈	\vdash		-	+-	+		┢	H	-+	+	+	H	+	+-	┿
				1-	<u> </u>				-	+-	\vdash		H	\dashv	+	+	+	╁╌	Н	- -	+	+	H	\dashv	+-	╁
									ļ	+	╁	-	Н	\dashv	+	╁	+-	⊢	H	\dashv	┿	+	Н	\dashv	+	┿
				-		·			+	+-	+	-	\vdash	+	┿	+	+	⊢	\vdash	+	+-	+	\vdash	\dashv	+	┼
					-		 		<u> </u>	+	-	┢	\vdash	+	+	+	-	╀		4	-	╄	\sqcup	4	_	\bot
									<u> </u>	+	╀	<u> </u>	Ц	-	_	↓.	\perp	<u> </u>		_	\perp	1	Ш	4		\perp
	_		<u> </u>						ļ	\bot	┖	ļ	Ц	4	4	\perp	┺	L		_	\perp	<u> </u>	Ш	\perp	\bot	┸
										_L	l		!		- 1	1		İ								

The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete sample identification number (10 c	naracters) will appear on field guidance forms and sample labels.	
AT1: VOCe (TAL)			Comments:
AT2: VOCs (TAL) - MS/MSD	AT12:	<u>.</u>	VOCs (TAL) - vitryl chloride, trichloroethene, tatrachioroethene, cls-1,2-dichloroethene, and
ATG:	4T42		trans-1,2-dichloroethene
AT4:			
ATS;			
AT6:			<u> </u>
AT7:	17.7		
ATB:			
AT9:	AT40.	-	
AT10:			
Analysis Saline:	C	onthigencles:	
			<u> </u>
			
		· · · · · · · · · · · · · · · · · · ·	

Plan Table Number: OPTIMIZ_MONTHLY

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

	04/2002	Ptan Table Revision:	. 0.0	нтојест	00 1-078 ISB RI	EMEDIAL ACTION GW -	OPTIMIZATION MONTHLY (PM)	Project Manager: NELS	SON, L. O.	_						SM	O Conta	ict K	RCHNE	R, D. F	₹.					
		iample Description			l ,		Sample	Location								mber A	nalysis	Турел	(AT) an	d Quan	tity Rec	questo	đ			
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	-	 	\vdash	ATA A	+	+	+	₩-	\vdash		T12 AT	13 AT1	14 AT1	5 AT16	AT17 AT	F18 AT19	AT2
OPT000	REG	GROUND WATER	GRAB	├─	11	TAN	MONITORING WELL	TSF-05A (71)	235	1	-	, US	1	3 1	+	┼-	-	VA	VE	-	+	+	4-4	4	4	Ļ
OPT001	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)		+	-	1	-+	+	1	-	Ľ	_	-+	+	+	╀	1	\perp	4	╄
OPT002	REG	GROUND WATER	GRAB	-	11	TAN	MONITORING WELL	<u> </u>	270	1	Н	_'	1	+	1	μ.		1	4	4	_	╄	Н	4.	丄	Ļ
OPT003	REG	GROUND WATER	GRAB		11		 	TAN-25 (11180	218	Ľ	Н	1	1	-	↓1	Η.	1	1	4	4	╄-	\bot	Ш	_	\perp	L
OPT004	REG	GROUND WATER	GRAB	 		TAN	MONITORING WELL	TAN-26 (1118)	389	1	H	1	1	1	1	1	1	1	4		┸	1	Ш		\perp	L
OPT005	REGACC			 	11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	<u>'</u>	1	1	_	┸	1	1	1		┸		L				
		GROUND WATER	DUP	 	11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	2			2	2	2								
OPT008	REG	GROUND WATER	GRAB	<u> </u>	11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	1			1	1	1	ï			Т	ŢŢ			
OPT007	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	t	1	Т	Т	1	-		1		Τ	Τ	П		\top	Г
OPT008	REG	GROUND WATER	GRAB		- 11	TAN	MONITORING WELL	TAN-31 (1219)	258	,	1	1	1		1	1	1	1	\neg			1	П		1-	Γ
OPT009	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37A (1183)	240	1	ī	1	1	T	1	1	1	1	ヿ	1	T	+	1		十	
OPT010	REG	GROUND WATER	GRAB	L	- 11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	1	+	十	1	1	1	1	+	†	+-	H	+	+	H
OPT011	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	┪	$^{+}$	┪┈	1	1	1	+	+	+	+	╁┪	+	+	Н
OPT012	REG	GROUND WATER	GRAB		11	[AN	MONITORING WELL	TAN-10A (348)	233	1	1	1	1	┪	+	1	1	1	+	+	╁	╁	╁╌┩		+-	⊢
OPT013	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	1	+	+	1	┪	,	\top	+	╁	+	H		╁╌	┢
OPT014	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-1	TBD	1	7	1	1	+	+-	1	1	1	+	+	+	╫┈	\vdash	+	+	H
OPT015	REG	GROUND WATER	GRAB			TÁN	MONITORING WELL	PMW-2	TBD	1	7	1	- -	+	+	1	H	1	+	+	+	+-	\vdash	+	┿	H
OPT018	ОС	GROUND WATER	FBLK		11	TAN	FIELD BLANK	qc	NA.	1		+	+	+	+	-	H	\dashv	+	+	╁	╁	┼╌┤	-	+	-
e sampling a 1: Alkalinit ≥ Analysis	<u>y</u>	on this table represents th	he firet six ch	navactors of	the asimple identi		The complete sample identification AT11: VOCs (TAL) - MS/MSD			ne and i	sample	'	Comme		1	L`.	<u> </u>						<u> [</u>	hone, ar		

The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete sample identification number (10 characters) will appear on field guidance forms and sample lab	la.
AT1: Alkalinity	AT11: VOC+(TAL)-MS/MSD	Comments:
AT2: Analysis Sults #1	AT12:	VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13:	trans-1,2-dichloroethene
AT4; Ethans/Ethono/Methans	AT14:	Fleid Tests - Analysis Suite #1, Alkelinity, and Chemical Oxygen Demand
ATS: Ethana/Ethene-Methane - MS/MSD	AT15:	The state of the s
AT6: Field Standard Addition - QC	17/4	
AT7: Gamma Screen	AT17:	
AT8: Propionate/Butyrate/Acetale/Lectale	ATTE:	
AT9: Trillium	AT19:	
AT10: VOCs (TAL)	AT20:	
Analysis Sullee:	Contingencies:	
Analysis Sults #1: Sulfate, Iron (Inorganic Analysis)	-	
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	

Plan Table Number: OPTIMIZ_MONTHLY

SAP Number; INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/04/2002

Plan Table Revision: 0.0 Project OU 1-078 ISS REMEDIAL ACTION GW - OPTIMIZATION MONTHLY (PM) Project Manager: NELSON, L.O.

	s	Sample Description					Sample	Location		ĺ					- (inter A	nalysis	Турва	(AT) and) Quant	ty Requ	ested			
Sampling	Sample	Sample	Cod	Sampling	Planned		Type of	T	Depth	AT1	AT2	ETA	AT4	ATS A	TB AT	7 ATR	AT9	AT10	AT11 A	Γ12 AT1	3 AT14	AT15	AT16 A	£17 AT1	8 AT19 AT2
Activity	Туре	Matrix	Туре	Method	Date	Area	Location	Location	(III)	A1	3A	C5	EG I	E3 F	6 R6	tN	R6	VA	VE		Τ		П		
OPT017	oc	GROUND WATER	TBLK		11	TAN	TRIP BLANK	QC .	NA				2		\top	T		2		T		П	$\neg +$	\top	十十
										Г	Г		\Box	Î	1	T	Γ	П		1			\top	十	1
							·							T	1	T		П	T	1	Τ		_	+-	\top
											<u> </u>			Ť	1	Τ	Ì	П		\top	\top	П		\top	
			<u> </u>												T					1	T		\top	\top	\Box
													T		T	T			T	1	T		一	_	\vdash
					<u>L</u> .										T				T	T	T		T	十	
																								\top	
				<u> </u>								П		T	Τ	T				T				\top	
										Ī			T	T	Τ	Γ		П	7	十		\exists	十	┪	\Box
										1		П		T	\top	Τ			十	╅	\Box		\top	\top	\top
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									T				ヿ	+	Τ	T	Т	\Box		十	1	П	十	\top	

The sampling activity displayed on this table represents the first six characters of the sample identification number.	The comple	ete sample identification number (10 characters) will appear on field guidance forms and sample labels	9.
AT1: Alkalirity	AT11: \(\frac{1}{2}\)	/OCs (TAL) - MS/MSD	Comments:
AT2: Analysis Suite #1	AT12:		VOCs (TAL) - vinyl chloride, trichloroethene, intrachloroethene, cis-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13: _		vens-1,2-dichlorcethens
AT4: Ethano/Ethono/Morthane	AT14:		Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
AT5: Ethane/Ethene/Methane - MS/MSD	AT15:		
AT6: Fleid Standard Addition - QC	AT16:		
AT7: Gamma Screen	AT 17:		
AT8: Propionate/Butyrate/Acetate/Lactels	AT18:		
ATQ: Tritium	AT 19:		
AT10: VOCa (TAL)	AT20:		
Analysis Suites:		Contingencies:	
Analysis Sutte #1: Sulfate, Iron (Inorganic Analysis)			
· · · · · · · · · · · · · · · · · · ·			
			· · · · · · · · · · · · · · · · · · ·

Plan Table Number: OPTIMIZ_QUARTER

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sempler: Carroll, R. E.

Date: 11/11/2002

Plan Table Revision: 0.0 Project: OU 1-078 ISB REMEDIAL ACTION GWM-OPTIMIZATION QURTRLY (PM) Project Manager: NELSON, L. O.

					i			11		_																	
	8	Sample Description					Sample i	Location								nter A	in milyed	. Туре	e (AT)	and C)uenti	ty Requ	perspect				
Sampling Activity	Sample Type	Sample Mairtx	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3	Н	\dashv	T8 AT	╁╾	+-	┿	+	╁	+	3 AT14	AT15	AT16	(T17 A	[18 A1	19AT
MT2000	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2	-	1	``	1	~	1	+-	╁	╁		Н	+	+	+
MTZ001	REG	GROUND WATER	GRAB	 		TAN	MONITORING WELL	TSF-058 (71)	270	 	1	1	2	+	+	╁	1	╁	╁	H	+	+	\vdash	\vdash	+	十	╀
MTZ002	REG	GROUND WATER	GRAB	 		TAN	MONITORING WELL	TAN-25 (1117)	218	1	-	1	2	+	+	╁	1	╁╌	 	┿	╁	+-	\vdash	\vdash	+	十	+
MTZ003	REG	GROUND WATER	GRAB	<u> </u>		TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	-	2	+	+	╁	1	\vdash	 ,	╄	╁	+	Н	Н	+	+	+
MT2004	REG	GROUND WATER	GRAB	 		TAN	MONITORING WELL	TAN-27 (1009)	235	1	ļ .	1	2	+	ť	╁	1	┢	1	┿	╁	\vdash	H	Н	+	十	+
MT2005	REG/QC	GROUND WATER	DUP			TAN	MONITORING WELL	TAN-28 (1008)	240	2	Ι.	2	4	-	╁	╁	2	┢	2	-	╁	╁	H	\dashv	+	+	+
MTZ006	REG	GROUND WATER	GRAB	<u> </u>		TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2	+	+	1	+		1	+	┢	╁	H	H	+	+	+
MT2007	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2	+	十	╁	1	┝	1	÷	2	\vdash	H	H	+	+	+
MTZ008	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		+,	┿	1	\vdash	1	╄	ŀ	╁	H	\dashv	╅	+	┿
MTZ009	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	H	2	Ť	t	1	╫	1	+	┢	\vdash	┢	\vdash	+	+	+
MTZ010	REG	GROUND WATER	GRAB		_	TAN	MONTORING WELL	TAN-37B (1163)	272	Ι,	,	1	2	+	+	十	1	H	1	÷	H	+-	\vdash	\dashv	+	+	+
MTZ011	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2	1	╈	╁	1	t	1	+-	┢	+		H	+	+	+
MTZ012	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2	\dashv	,	+	1	t	1	┿	┢	+		\forall	+	+	+
MTZ013	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-D2 (339)	241	١,	1	1	2	十	+	T	1	t	1	2	H	╁	Н	\forall	+	十	†
MT2014	REG	GROUND WATER	GRAB	T		TAN	MONITORING WELL	PMW-1	TBD	,	1	1	2	\dashv	+	t	1	t	1	2	H	一	H	\vdash		╅	$^{+}$
MT2015	REG	GROUND WATER	GRAB	1		TAN	MONITORING WIELL	PMW-2	TBD	1	1	1	2	-	+	┢	1	┪	1	2	H	T	-	H	+	十	$^{+}$
MTZ034	oc	GROUND WATER	FBLK	<u> </u>		TAN	FIELD BLANK	QC .	NA	1	1	1	2	+	╈	1	1	1	1	+	H	╆	-	\vdash	+	╁	十
1: <u>Alkalını</u> 2: <u>Anabas</u>		on this table represents t	he first elx c	haracters of	the sample ident		The complete sample identification AT11: Tritium	number (10 characters) will appe	at on field guidance form	es and	sample	- label	Comm	rents: (TAL) - 1,2-dichi			irichio	oshe	ne, tet	rachic	cetha	ne, de	-1,2-4	chloroel	hene, a	nd	_
	Ethene-Methane						AT14:						Fleid 1	iests - A	nalysis	Sul le A	H, Ma	Φily,	and C	00	_	_				_	_
	Ethene/Methane tandard Addition						AT15:					_	Split s	amples \	vili be co	Mecte	d et al	locati	ons for	r VOC	s (TAL	.) and i	thene	Ethene	Methan	m ana	y368
	Screen	-40	 -	-			AT18: AT17:			_		_	_													_	_
B: Gamma												_				_										_	
9: Propion	ste/Butyrete/Ace	Harte/Lectabe					AT19:					_					_			_	_						_
10: <u>Sr-90</u>							AT20:					_	_													_	
ralysis Suites								Contingencies:																			
natyale Suite 1	#1: Sulfata, Iron	(Inorganic Analysis)																									
																					_						_

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Oats: 11/11/2002

Plan Table Revision: 0.0 Project: OU 1-078 ISB REMEDIAL ACTION GWM - OPTIMIZATION QURTRLY (PM) Project Manager: NELSON, L. O.

	5	Sample Description					Sample	Location		L					ı	Enter /	inalysis	туре	(AT)	and Cau	antity	Requas	ted			
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4	AT5 A	T6 AT	7 AT	8 ATG	AT10	AT11	AT12	AT13	AT14 A	T15 AT	(16 AT1)	7 AT18	AT19AT2
Activity	Туре	Matrix	Туре	Method	Date	Avea	Location	Location	(ft)	A1	3A	C5	EG	E3 1	6 R5	R4	- IN	RB	R8	VA	VΕ				\prod	
MTZ035	QC	GROUND WATER	TBLK			TAN	TRIP BLANK	QC .	NA	T	Ħ		3	Ť	1	T	T	T	П	3	7	十	T	1-	П	\vdash
											П		T			T	Τ.	Г	П		T	_	1	\top	17	\sqcap
				<u> </u>						-	П			T	1				П		T	T		1	П	
											П			T		T	Т	Г			╗	_	丁	十	\Box	\sqcap
											П			T		T	T	Г			┪	1	T	1	П	
										Ī	П				T	T	1				╗	1	1	十	T	
											П			T	T	T	Т	Г	П	\dashv	7	7	1	\top	\sqcap	\sqcap
											П			T	T	Τ	Τ					_	┪	\top	\sqcap	\sqcap
											П			Ī	T	T						T	T	\top	\sqcap	
										Т	П		\neg			T	Τ	Г	П		╗	十	T	十	\sqcap	
	<u> </u>									Τ	П			T	Τ	Τ	Τ				T	7	十	十	\sqcap	
										T	П					T			П	┪	\neg	T	1	\top	\top	
										T	П			7	T	T	T		Н	T	┪	T	\top	1	\vdash	\top

The se	ampling activity displayed on this table represents the first six characters of the sample identification number.	The con	plete sample identification number (10 characters) will appear on field guidance forms and sample label	4.
AT1:	Alkalinky	ATO:	Tribum	Comments:
AT2:	Analysis Sults #1	AT12:	VOCs (TAL)	VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cle-1,2-dichloroethene, and
AT3:	Chemical Oxygen Demand	AT13:	VOCs (TAL) - MS/MSD	trans-1,2-dichloroethene
AT4:	Ethano/Ethone/Methane	AT14:		Field Tests - Analysis Suite #1, all almity, and COD
ATS:	Ethane/Ethene/Methane - MS/MSD	AT15:		
ATC:	Field Standard Addition - QC	AT16:		Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses
AT7:	Gemma Screen	AT17:		
AT8:	Gamma Spec	AT18:		
AT9:	Propionale/Butyr atm/Acetales/Lactate	AT19:		
AT10:	8-90	AT20:		
Analy	rata Suittes:		Contingencies:	
Analy	rsis Suite #1: Suifale, Iron (Inorganic Analysis)			
_				Y.,
_				

Plan Table Number: OFTIMIZ_SEM

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 07/19/2002

Plain Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION SEMI (PM)

Project Manager: NELSON, L. O.

										_																	_
		Sample Description			İ		Sample	Location				_				nier A	nalysis	Туры	(AT)	nd Qu	ıntity	Reque	sted				
Sampling Activity	Заттрію Турю	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth: (ft)	AT1		-	\vdash	A16 A	┰	+	AT9	\vdash	AT11		-	AT14	AT15 /	T16 A1	17 AT1	18 AT19/	T2
OSM000	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05A (71)	235	1	1	1	2	+	+,	╁	1	H	1	2	7	\dashv	\dashv	-+-	+	+	_
OSM001	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2	\dashv	+,	┢	1	-	1	7	+	\dashv	+	+	+-	╂┼	_
OSM002	REG	GROUND WATER	GRAB	ļ	11	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2	╅	1	H	1		1	2	\pm	\dashv	+	╅	╁	++	_
DSM003	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2	+	+,	┢	1	_	1	<u>-</u>	十	十	+	十	十	+	_
OSM004	REG	GROUND WATER	GRAB		- 11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2	\dashv	+	╁╴	1		7	2	+	7	+	十	+	╁	-
C8M005	REGIQC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4	+	+-	t	2		2	4	十	-	\dashv	╁	+	+	-
OSM008	REG	GROUND WATER	GRAB	Ι	11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2	+	十	1	1	1	1	2	†	\dashv	\dashv	十	+	+	-
OSM007	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		+	T	1		1	\dashv	2	\dashv	+	+	+	+	-
OSMADOS	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		1	T	1		4	2	†	+	T	+	+	++	-
OSMOOS	REG	GROUND WATER	GRAB		11	TÁN	MONITORING WELL	TAN-37A (1163)	240	1	1	1 ;	2	١,	 		1		1	2	寸	+	1	+	\dagger	†+	-
OSM010	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2	T	T	\vdash	1		1	2	1	\dashv	┪	+	†	+	_
OSM011	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1		2	\top	Г	1		7	2	\dashv	寸	1	\top	+	11	-
OSM012	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2	†	T	T	1		1	2	\top	十	十	+	+	+	-
OSM013	REG	GROUND WATER	GRA8		11	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2	\top	Τ		1		1	2	ナ	\top	†	\top	\top	††	_
OSM014	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMV-1	TBD	1	1	1	2		1		1	\neg	1	2	十	\dashv	\dagger	1	+	++	_
OSM015	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBO	1	1	1	2	T	+	Г	1		1	2	十	寸	+	十	T	†††	_
OSM016	QC	GROUND WATER	FBLK		11	TAN	FIELD SLANK	QC .	NA NA	1	1	1	2	1	Т	1	1	1	1	2	†	十	+	十	\top	+	-

The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.	
AT11: Tritium	Comments:
AT12: VOCk (TAL)	VOCs (TAL) - viryl chloride, trichloroethene, tetrachioroethene, cis-1,2-dichloroethene, and
AT13: VOCe (TAL) - MS/MSD	rams-1_2-dichioroethene
AT14:	Spill samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site
	abor atory.
AT10.	
	ield Tests - Analysis Suite #1, Alkalnity, and Chemical Oxygen Demand
AT20:	<u> </u>
Contingencies:	
	\text{\tint{\text{\text{\text{\tint{\text{\tint{\text{\tint{\text{\text{\text{\tint{\text{\text{\text{\text{\text{\tinit}}\text{\tinit}\text{\text{\text{\text{\text{\text{\text{\tinit}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\texi}\text{\text{\text{\text{\text{\text{\text{\text{\text{\texit{\texi}\text{\text{\text{\ti}\text{\text{\texit{\text{\texit{\texi}\text{\text{\text{\

Plan Table Humber: OPTIMIZ_SEM

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 07/19/2002

Plan Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION GW - OPTIMIZATION SEM# (PM)

Project Manager: NELSON, L. O.

	8	ample Description	~-				Sample	Location								nter A	nalysis	Types (A	T) and	Quantit	y Requ	ested			
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4	ATS A	16 AT	7 ATE	ATD	AT10 AT	11 AT	2 AT1:	AT14	AT15.	AT18 AT	Γ17 AΥ18	AT19AT2
Activity	Туре	Metrix	Туре	Method	Date	Area	Location	Location		A1	3A	CS	ĒG	E3 F	6 R5	R4	1N	RB R	s va	VE	Г	П		Т	П
OSM017	QC	GROUND WATER	TBLK	ļ	11	TAN	TRIP BLANK	90	NA				3		1	T			3	Г		П	寸	\top	
																Γ	П		Т				\top		
		<u> </u>		ļ															Τ	1	Γ		T		
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete sample identification number (10 characters) will appear on field guidance forms and eample lab	18 6.
AT1: Alkalinity	AT11: Tribum	Continuents:
AT2: Analysis Sulin #1	AT12: VOCs (TAL)	VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3; Chemical Oxygen Demand	AT13: VOCs (TAL) - MS/MSD	trans-1,2-dichlorgethene
AT4: Ethane/Ethane/Alethane	AT14:	Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site
ATS: Ethene/Ethene/Alethane - MS/MSD	AT15:	laboratory.
AT6: Field Standard Addition - QC	AT18:	Flekt Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
ATT: Gamma Screen	AT17;	THE TOWN COMPANY THE MANY, AND CHARLEST CAPPOR DOUBLEST
AT8: Gamma Spec	AT18:	
AT9: Propionate/Butyrate/Acetate/Lactate	AT19:	
AT10: 8-90	AT20:	
Analysis Sulties:	Contingencies:	
Analysis Sults #1: Ammonia hitrogen, Phosphate, Sultate, Iron (Inorganic Analysis)		
		· · · · · · · · · · · · · · · · · · ·
	······································	······································
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Plan Tuble Number: OPTIMIZ_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002

Plan Table Revision: 0.0 Project OU 1-07B ISB REMEDIAL ACTION GWM-OPTIMIZATION ANNUAL (PM) Project Manager: NELSON, L.O.

		rial (abs rivido).		110,002	-	I THE DAL NOTION GIVEN	- OPTIMIZATION ANNUAL (PM)	Project Manager: NEU	SON, L. O.							8	MO C	ontac	E KIP	RCHN	ER, D.	R.						
	:	Bample Description					Sample	Location		L						Enter	Analy	rsis Ty	rpes ((AT) =	nd Qu	entity R	ednes	ted				
Sampling Activity	Sample Type	Sample Matrix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	AT1	AT2	AT3		ATS E3	ATS A	┿	+	+	-	-+	\dashv	+	/14 A1	T15 AT	16 AT1	AT18	AT194	١
MTZ016	REG	GROUND WATER	GRAB	 -	-	TAN	MONITORING WELL	TSF-05A (71)	235	1	-	1	2	7	13 1	+		+	1	-		2	+	+	+-	┼	\vdash	
MTZ017	REG	GROUND WATER	GRAB		i —	TAN	MONITORING WELL	TSF-05B (71)	270	1		1	\vdash	\dashv	+	+	+	+	1	-		2	+	┰	╁	\vdash	\vdash	•
MT2018	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	┢╾┥	+	+	+	-	+	1	\dashv	-+	2	+	╬	╀	╀╌	\vdash	
MTZ019	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-25 (1118)	389	1	1	1	-	\dashv	+	+	-	+	1	\rightarrow		2	+	╁	┰	\vdash	 	,
MTZ020	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-27 (1009)	236	1	1	1	2	_	+	+	$^{+}$	╅	1	+	\rightarrow	2	十	╫	╁	H	Н	
MTZ021	REG/QC	GROUND WATER	DUP			TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4	+	╅	+	\dagger	2	2	-+	-	4	+	+	╁	H	H	
MTZ022	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-28 (1010)	253	1	1	1	2	+	+	+	+	-+-	1	╗	\rightarrow	2	十	+	十	H	\dashv	•
MTZ023	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2	7	1	+	+	+	1	+	-	2	十	+-	╁	Н	\dashv	٠
MT 2024	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2	1	+,	+	$^{+}$, †	1	+	1		2	╅	╁	╁┤	\dashv	,
MT2025	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37A (1163)	240	7	1	1	2	\dashv	╅	+	+	+	1	+	7	2	+	+	╀╌	Н	\vdash	•
MT2026	REG	GROUND WATER	GRAB	_		TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	Н	2	+	$^{+}$	+	+	1	+	-	2	+	+	┼~	Н	\vdash	
MT2027	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2	+	╁	十	+	+	1	+	+	2	+	╅	十	Н	\dashv	,
MTZ028	REG	GROUND WATER	GRAB	1		TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2	\dashv	+	╈	十	+	1		_	2	+	╅╴	╁	Н	一	
MTZ029	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2	-	+	┿	$^{+}$	╅	1	+	\rightarrow	2	+	╁	+	Н	\dashv	
MTZ030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2	十	+	十	╁	+	1	十	1	2	+	┿	╁	Н	+	•
MTZ031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-2	TBO	1	1	1	2	+	+	╁	$^{+}$	十	1	+	-+	2	+	+	╁	┢╌┤	+	
VT7032	QC	WATER	FBLK		"	TAN	FIELD BLANK	QC	NA.	1	1	╗		+	+	+,	+	+	1	1	-+	2	+	╁	╄	Н	\dashv	
Allabra Atlabra		on this table represents t	he first six ci	haracters of	the sample ident	<u> </u>	The complete sample identification AT11: Sr-90 AT12: Tritium AT13: VOCs (TAL)	number (10 cherecters) will appe	ar on field guidence forn	ne and	sample	Labe)	Comm VOCa	(TAL)	vinyl of		, erichi	orost	hene,	tetrac	thioros	thene,	cis-1,2	:-dichtor	oethen	and		
	Ethene/Mathane						AT14: VOCs (TAL) - MS/MSD			_		_	Field ?	ests -	Vnalysis	Suits	#1. a	kalini	w. CO		_	—				—		
: Ethere	Ethene/Methane	- MSAMSO					AT15:					_	_								_		_			_		
	anderd Addition	- QC					AT16:					_	Spit s	emple s	will be o	ollect	ed at	all loc	ations	for VC	OCs (1	AL) no	d Etha	ne/Ethe	neMe	nane a	18iyses	
	Screen						AT17:					_	_					_		_	_						_	
: Gamm			_									_																
	ate/Butyrate/Ace	tale/Lectate					AT19:		***			-	_						_	_	_		=					
nlysia Sulte:							A120;	Continue				_		-		-	_									_		
		togen, Phoephale, Sulfab	e, iron (inorg	ganic Analys	is)			Confingencies:																				
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														_					-	_	_	—				—		

Plan Table Number: OPTIMIZ_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Cerroll, R. E.

Date: 11/11/2002

Plan Table Revision: 0.0 Project OU 1-078 ISB REMEDIAL ACTION GWM - OPTIMIZATION ANNUAL (PM) Project Manager: NELSON, L.O.

		Sample Description					Sampi	a Location		Τ					E	nier A	nalysis	Турев (А	T) and	Quanti	y Requ	heataci			
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of		Depth	AT1	AT2	AT3	AT4	T5 AT	8 AT7	STA	ATO	AT10 AT	11.AT	12 AT1	3 AT14	AT15	AT16 A	T17 AT1	IB AT19 AT2
Activity	Туре	Mairix	Тура	Method	Date	Area	Location	Location	(m)	A1	ЗА .	C5	EG (3 F6	R5	R4	GA	1N R	B RX	VA	VE				
MTZ033	oc oc	WATER	TBLK	<u> </u>		TAN	TRIP BLANK	oc oc	NA.	T			3	T					Ť	3			П		1
				Ш.										1	T	Π				T			П	1	
				<u> </u>						\mathbf{I}			П	Т	Т	Г			Τ	Т		Г	П		IT
				<u> </u>											П				T	Τ			П	1"	
																Π			Τ					1	\Box
					<u>L</u>										Π	Γ			Τ				П		П
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			<u>L</u> .																						
																			Τ						\prod
																				Γ				\top	\Box
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The cor	mpiete sample identification number (10 cherecters) will appear on field guidance forms and sample tabe	k
AT1: Alkalinity	AT11:	8r-90	Comments:
AT2: Analysia Suita #1	AT12:	Triffium	VOCs (TAL) - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	AT13:	VOCs (TAL)	trans-1,2-dichloroethene
AT4: Ethane/Ethene/Methane	AT14:	VOCs (TAL) - MS/MSD	Fleid Texts - Analysie Sulte #1, alkalinity, COD
ATS: Ethane/Ethane/Vethane - MS/MSD	AT15:		
ATE: Field Standard Addition - QC	AT16:		Split samples will be collected at all locations for VOCs (TAL) and Ethans/Ethens/Methans analyses
AT7: Gemma Screen	AT17:		
AT8: Genna Spec	AT18:		
ATB: Gross Alpha	AT19:		
AT10: Propionate/Butyrate/Acetale/Lactale	AT20:		
Analysis Sulles:		Contingencies:	
Analysis Sults #1: Ammonia Mirogen, Phosphate, Sulfate, Iron (Inorganic Analysis)			

Plan Table Number: OPT_COMPLIANCE

DRAFT

Sampler: Carroll, R. E.

SAP Number: Date: 07/19/2002

Plan Table Revision: 0.0 Project: OPTIMIZATION - COMPLIANCE MONITORING - QUARTERLY

Project Manager: NELSON, L. O.

					-		*****																			
	s	ample Description			İ		Sample i	ocation								Enter A	inalysis	Туре	(AT) sets	Quan	ity Requ	betses	_			
Sampling Activity	Sample Type	Sample Mairix	Coll Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth (ft)	_	AT2	+-	AT4	4T5 A	AT AT	7 ATI	8 AT9	AT10	AT11 A	T12 AT	13 AT14	AT15	AT10 A	€17 AT	T18 AT19	AT20
ОСМООС	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-1		\top	1		H	┽	╁	t	1	 	H	+	t	├	Н	\pm	+	H
OCM001	REG/QC	GROUND WATER	DUP		11	TAN	MONITORING WELL	PMN-2		2	 	T	\vdash	$^{+}$	+	+-		┢	+	╁	╁		╁	+	+-	┢
OCM002	ac	GROUND WATER	FBLK		11	TAN	FIELD BLANK	qc	NA.	1	T	t		\dagger	_	t	+-	┢	\vdash	+	+-		\vdash	十	+	┢
OCM003	ac	GROUND WATER	TBLK		- 11	TAN	TRIP BLANK	Q C	NA.	1		T	П	7	\top	1	1		\vdash	+			H	十	+	┝
									1	T	T	T	Н	Ť	1	T	1	<u> </u>		\top	T		H	十	+	┢╌
										Τ	Γ	Г		Ť	┰	T	T	┢		\top	T		\vdash	十	十	_
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											l													Τ		

The sa	impling activity displayed on this table represents the first six characters of the sample identification number.	The comp	ista sample identification number (10 characters) will appear on field guidance forms and sample labels.	
	VOCs (TAL)	AT11:	· · · · · · · · · · · · · · · · · · ·	Primerita:
AT2:	VOCe (TAL) - MS/MSD	AT12:	<u>vo</u>	Cs (TAL) - vinyl chloride, trichloroethens, tetrachloroethene, cis-1,2-dichloroethene, and
ATS:		AT13:	ta .	na-1,2-dichloroethene
AT4:		AT14:		
AT5:		AT15:		
AT6:		AT18:		
AT7:		AT17:		
AT8:		AT18:		
AT9:		AT19:		
AT10:		AT20:		
Analya	do Sulten:		Contingencies:	
	· · · · · · · · · · · · · · · · · · ·			
				····

Plain Table Number: LTERIALQUARTER

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002

SAP Number: INEEL/EXT-2002-00779

Plan Table Revision: 0.0 Project: OU 1-078 ISB REMEDIAL ACTION GWM-LONG TERM QUARTERLY (PM) Project Manager: NELSON, L. O.

		Sample Description					Sample I	Location								inter A)alyzis	Турес	(FA)	nd Que	ntity R	equeste	d		
Sampling	Sample	Samole	Coll	Sampling	Planned	<u> </u>	Type of	<u> </u>	Depth	AT1	AT2	ETA	AT4	AT5	ATS AT	7 ATB	ΑΤΩ	AT10	AT11	NT12A	T13 A	T14 AT1	15 AT16 AT	[17 AT1	8 AT19AT
Activity	Туре	Metrix	Туре	Method	Date	Area	Location	Location	(ft)	A1	3A	C5	EG	E3	F6 R5	R4	1N	RØ	RB	VA .	VE	十	\top	+	++
LTQ018	REG	GROUND WATER	GRAB		- 11	TAN	MONITORING WELL	T9F-05A (71)	235	١,	1	1	2		1		1		1	2	Ť	+	T	┪-	++
LTQ017	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05B (71)	270	1	1	1	2		١,	T	1		1	2	\top	+	†+	+-	+
LYQ018	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2		1	Т	1		1	2	\dagger	\top		╅	\vdash
LTQ019	REG	GROUND WATER	GRAB		- 11	TAN	MONITORING WELL	TAN-26 (1118)	369	1	1	1	2		1	Г	1		1	2	1	\top	\Box	\top	${\dagger \dagger}$
LTQ020	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2		1	T	1		1	2	1	+	††	\top	\Box
LTQ021	REG/QC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	1				2		2	4	1	_	\Box	十	\top
LTQ022	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2			1	1	1	1	2	1	\top	\top	+	\top
LTQ023	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		T		1		1	1	2	\top	\Box	1	\top
LTQ024	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		٦,	T	1		1	2	Ť	\top	17	十	$\top \top$
LTQ025	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	П	2	T	Г	1		1	2	Ť	\top	\top	十	$\top \top$
LTQ026	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-378 (1163)	272	Ī	1	1	2	T		T	1		1	2	1	\top	\top	1	\Box
LTQ027	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2		1		1		1	2		\top	\top	1	\sqcap
LTQ028	REG	GROUND WATER	GRAB	L.	11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	ţ	2		1		1		1	2	Ť	\top	\sqcap	1	\sqcap
LTQ029	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-D2 (339)	24†	١,	1	1	2		\top	Г	1		1	2	T	1	††	T	\Box
LTQ030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2			Г	1		1	2	T	_	\Box	\top	
LTQ031	REG	GROUND WATER	GRAB	L		TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2	T		T	1		1	2	1	十	\Box	十	\sqcap
LTQ032	QC	GROUND WATER	FBLK		- 11	TAN	FIELD BLANK	QC C	NA.	1	ī	1	2		\neg	١.	1	_	╗	2	╅	\top	 	+	\vdash

The entire of second residual control of the second residual of the second residual of the second residual control of the second residual	The complete semple identification number (10 characters) will appear on field guidance forms and sample labels	•
AT1: Alkalinity	AT11: Tribum	Comments:
AT2: Analysis Suite #1		VOCs (TAL) - vinyl chloride, trichloroethere, tetrachloroethere, cts-1,2-dichloroethere, and
AT3: Chemical Oxygen Demand	AT13: VOCs (TAL) - MS/MSD	trans-1,2-dichloroethene
AT4: Ethane/Ethene/Methane	AT14:	Field Tests - Analysis Suits #1, alkalinity, and COD
AT5: Ethane/Ethene/Methane - MIS/MISD	ATI5:	
AT6: Field Standard Addition - QC	ATIE:	Split samples will be collected at all locations for VOCs (TAL) and Ethane/Ethane/Methane analyses
AT7: Gamma Screen	AT17:	
ATE: Gamma Spec	AT18:	
AT9: Propionata/Butyrata/Acetate/Lactate	AT19:	
AT10: \$r-90	AT20:	
Analysis Sulles:	Confingencies:	
Analysis Suite #1; Suifete, Iron [Inorganic Analysis]		
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Plan Table Number: LTERM_QUARTER

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002

SAP Number: INEEL/EXT-2002-00779

Plan Table Revision: 0.0 Project: OU 1-078 ISS REMEDIAL ACTION GWM-LONG TERM QUARTERLY (PM) Project Manager: HELSON, L.O.

					T					_															
	\$	ample Description					Sample	Location							En	wher Ar	alyals	Types (A	r) and	Quantit	Редин	ested			
Sampling	Sample	Sample	Coll	Sampling	1		Type of	<u> </u>	Depth	AT1	AT2	АТЗ А	T4 AT	6 ATE	A17	ATB	ATS	AT10 AT	11 AT	2 AT10	AT14	AT15	AT18 AT	.7 AT18	AT19AT2
Activity	Туре	Matrix	Тура	Method	Date	Avea	Location	Location	(ft)	A1	34	C5 E	G E3	F6	R5	R4	1N	RB R	s W	VE					
LTQ033	QC	GROUND WATER	TBLK		11	TAN	TRIP BLANK	QC .	NA				3						3	Т		T		1	
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete sample identification number (10 characters) will appear on field guidance forms and sample labels.	
AT1: Akainity		Milmonia.
AT2: Analysis Suits #1		XCs [TAL] - vinyl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3; Chemical Oxygen Demand	AT13: VOCs (TAL) - MS/MSD	ns-1,2-dichloroethene
AT4: Ethane/Ethene/Methane	AT14:	old Tests - Analysis Sulle #1, alkalinity, and COD
ATS: Ethene/Ethene/Methane - MS/MSD	AT15:	
AT6: Field Standard Addition - QC	ATIE:	It samples will be collected at all locations for VOCs (TAL) and Ethans/Ethens/Methans analyses
AT7: Gamma Screen	AT17:	
AT8: Gamma Spec	AT18:	
AT9: Propionale/Butyrale/Acetale/Lactale	A719:	
AT10: 9-90	AT20:	
Analysis Saltes:	Contingencies:	
Analysis Sulte #1; Sulfate, Iron (Inorganic Analysis)		
		
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Plan Table Number: LTERM_SEM

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002

Plan Table Revision: 0.0 Project OU 1-078 /S8 REMEDIAL ACTION GW - LONG TERM SEMI (PM)

Project Manager: NELSON, L. O.

		Sample Description			i		Samole	Location							E	Enter A	nalysis	Турея	(AT) an	d Quar	ntily Fi	dequest	ed		
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of		D#	AT1	AT2	AT3	AT4	AT5 A	TO AT	AT8	AT9	AT10	AT11 A	T12 A	T13 A	T14 A1	115 AT18	AT17	ATIS ATIS
Activity	Тура	Martx	Туре	Method	Carte	Area	Location	Location	Depth (ft)	A1	ЗA	C6	EG	E3 F	8 R5	R4	1N	RB	Ra	/A V	<u>_</u>	\dagger	\top	H	
LTS033	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-05A (71)	235	1	,	1	2	T	1		1		1	2	\dagger	\top	† ¬	H	
LT9034	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-058 (71)	270	1	7	1	2	十	1	†"	1		1	2	†	十	十	\vdash	
LT8035	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2	_	17	†	1		1	2	+	\pm	+-	\vdash	
LT9038	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-26 (1118)	389	1	1	1	2		1	 	1		1	2	†	十	+	H	
LT9037	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	7	1	2	1	\top	†	1		1	2	\dagger	+	+	H	
LTS038	REG/QC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4	╅	\top	十	2		2	₁ ├	†	_	+	Н	<u> </u>
LT903P	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-29 (1010)	263	1	1	1	2	7	+	1	1	1	1	2	十	+	+	\vdash	
LT9040	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2	7	+		1		1	1	2	十	+		
LT9041	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2	1	1	T	1	М	1	2	+	+	17	Н	
LT9042	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2		+	\vdash	1		1	2	十	+	+		-++
LT8043	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	2		+		1		1	2	†	十	+	П	$\dashv \dashv$
LT9044	REG	GROUND WATER	GRAÐ		11	TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	十	2	1		1		1	2	T	\top	+	П	
LT3045	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2		T	T	1		1	2	十	\top	+1	П	
LT3046	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-02 (339)	241	1	1	1	2	7	\top	T	1		1	2	†	十	+-1	\Box	\Box
LT9047	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2	┪	\top		1	_	1	2	十	+	\top	\Box	
LT9048	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	PMW-2	TBD	1	1	1	2	7	1	Ť			1	2	+	十	T	\sqcap	\Box
LT8049	QC	GROUND WATER	FBLK		11	TAN	FIELD BLANK	oc oc	NA NA	1,	Т	┪	2	-	+	Τ.	Н.	1	7	2	十	+	+	\vdash	- 1 - 1

The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete earnple identification num	nber (10 characters) will appear on field guidance forms and sample lab	eia.
AT1: Alkalinity	AT11: Triffum		Comments:
AT2: Anshriis Sults #1	AT12: VOCa (TAL)		VOCs (TAL) - vinyl chloride, trichloroethene, intrachloroethene, cis-1,2-dichloroethene, and
AT3; Chemical Oxygen Demand	AT13: VOCs (TAL) - MS/MSD	· · · · · · · · · · · · · · · · · · ·	trans-1,2-dichloroethene
AT4; Ethane/Ethene/Methane			Spitt samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-situ
ATS: Ethane/Etherne/Methane - MS/MSD			laboratory.
AT8: Field Standard Addition - QC			
AT7: Germa Screen			Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
AT8: Gemme Spec			
AT9: Propionals/Butyrate/Acetate/Lectate			
AT10: Sr-90	AT20:		
Analysis Suites:	·	Confingencies:	
Analysis Suite #1: Ammonia Nitrogen, Phosphate, Sulfair, Iron (Inorganic Analysis)			
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Plan Table Humber: LTERM_SEMI

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002

Plan Table Revision; 0.0 Project OU 1-07B ISB REMEDIAL ACTION GW - LONG TERM SEMI (PM)

Project Manager: NELSON, L. O.

		Sample Description			1		Sample	Location							E	inter Ar	alysis'	Types (AT	and C) Juantity	Reque	tled		
Sampling	Sample	Sample	Coll	Sampling	Planned		Type of	[Depth	AT1	AT2	AT3	AT4 A	T5 A1	6 AT	вта ч	АТЭ	AT10 AT1	ATT:	2 AT13	AT14	T15 AT	16 AT 17 /	T18 AT19 AT
Activity	Тура	Metrix	Туре	Method	Date	Area	Location	Location	(m)	A1	3A	C5	EG E	3 F6	R5	R4	10	RB R8	VA	VE				
LT8050	QC	GROUND WATER	TBLK	<u> </u>	11	TAN	TRIP BLANK	oc oc	NA.		Γ		3		Τ	Г	П		3			7	$\dagger \dagger$	\dashv
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The cor	mplete sample identification number	(10 characters) will appear on field guidance forms and eample label	k .
AT1: Alkalinky	AT11:	Tribum		Comments:
AT2: Anahrala Suita #1	AT12:	VOCe (TAL)		VOCs (TAL) - viryl chloride, trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and
AT3: Chemical Oxygen Demand	A†13:	VOC# (TAL) - MS/MSD		trans-1,2-dichloroethene
AT4: Ethane/Ethene-Methane	AT14:			Split samples for VOCs (TAL will be collected. One set will go to IRC and the other to the off-site
ATS: Etheno/Etheno/Allethane - MS/MSD	AT15:			laboratory.
AT6: Field Standard Addition - QC	AT16:			Field Tests - Analysis Suite #1, Alkalinity, and Chemical Oxygen Demand
AT7: Gemma Screen	AT17:		-	The second of th
AT8; Gamma Spec	AT18:			
ATS: Propionale/Butyrate/Acetate/Lectate	AT19:			
AT10: \$1-90	AT20:			
Analysis Suffae:			Contingencies:	
Analysis Suite #1: Ammonia Mitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)				
			 	
				

Plum Table Number: LTERM_ANNUAL

SAP Number: INEEL/EXT-2002-00779

DRAFT

Sampler: Carroll, R. E.

Date: 11/11/2002

Plan Table Revision: 0.0 Project OU 1-078 ISB REMEDIAL ACTION GWM-LONG TERM ANNUAL (PM)

Project Manager: NELSON, L. O.

																	LI COM									
	\$	Sample Description					Sample	Location								Enter	inalysis	Туре	a (AT)	and Q	uantity	Requ	ecisd			
Sampling	Sample	Sample	Coll	Sampling	Planned	<u> </u>	Type of		Depth	AT1	AT2	АТЗ	AT4	AT5	TS A	7 A1	B ATS	AT10	AT11	AT12	AT13	AT14	AT15	AT16 AT	17 AT1	8 AT18 AT2
Activity	Туре	Matrix	Тура	Method	Date	Area	Location	Location	(ft)	A1	3A	C5	EG	E3	F6 R	S R	GA	1N	RB	R8	VA.	VE				
LTA016	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	T8F-05A (71)	235	7	1	1	2		7	T	1	1		1	2				T	\sqcap
LTA017	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TSF-058 (71)	270	1	1	1	2		٦,	1	1	1	Г	1	2		T	1	\top	\vdash
LTA018	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-25 (1117)	218	1	1	1	2	T	7	T	1	1	T	1	2			\top	\top	\Box
LTA019	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-28 (1118)	389	1	1	1	2		٦,	T	1	1	Τ	1	2				+-	\vdash
LTA020	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-27 (1009)	235	1	1	1	2		T	T	1	1	T	1	2	П		1	+	
LTA021	REG/QC	GROUND WATER	DUP		11	TAN	MONITORING WELL	TAN-28 (1008)	240	2	2	2	4	T	\top	T	2	2		2	-	П		丁	\top	\vdash
LTA022	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-29 (1010)	253	1	1	1	2			1	1	1	1	1	2			1	\top	\vdash
LTA023	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-30A (1012)	310	1	1	1	2		1	T		1		1	2				1	
LTA024	REG	GROUND WATER	GRA8		. 11	TAN	MONITORING WELL	TAN-31 (1219)	258	1	1	1	2		٦.		1	1		1		2		T	1	
LTA025	REG	GROUND WATER	GRA8		11	TAN	MONITORING WELL	TAN-37A (1163)	240	1	1	1	2			T	1	1	T	1	2				1	\vdash
LTA026	REG	GROUND WATER	GRAB		11	TAN	MONITORING WELL	TAN-37B (1163)	272	1	1	1	П	2		T		1	Г	1	2					
LTA027	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	TAN-37C (1163)	375	1	1	1	2			1		1		- 1	2				\top	
LTA028	REG	GROUND WATER	GRA8		. 11	TAN	MONITORING WELL	TAN-10A (348)	233	1	1	1	2	T	1	Τ		1		1	2			\top	\top	\Box
LTA029	REG	GROUND WATER	GRAB		- 11	TAN	MONITORING WELL	TAN-D2 (339)	241	1	1	1	2	T		T		1	Г	1	2				\top	
LTA030	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMW-1	TBD	1	1	1	2			Τ		1		1	2	П			T	\sqcap
LTA031	REG	GROUND WATER	GRAB			TAN	MONITORING WELL	PMN-2	TBD	1	1	1	2			Τ	Τ	1		1	2				1	\sqcap
LTA032	ФС	WATER	FBLX		- 11	TAN	FIELD BLANK	ac	NA	1	7	1	2		T		1	1		1	2				\top	\sqcap

The semi-year activity coloration on the came represents the mot account of the sample (densitication number).	The complete sample identification number (10 characters) will appear on field guidance forms and sample label	s.
AT1: Alkalinky	AT11: Sr-90	Comments:
AT2: Analysis Suite #1	AT12: Tritum	VOCs (TAL) - viryl chloride, trichlorosithens, tetrachlorosithens, cis-1,2-dichlorosithens, and
AT3: Chemical Oxygen Demand	AT13: VOCs(TAL)	trans-1,2-dichleroethene
AT4: Ethano/Etheno/Mothano	AT14: VOCs (TAL) - MS/MSD	Field Tests - Analysis Suite #1, alkelinity, COD
ATS: Ethane/Ethene/kishane - MS/MSO	AT15:	
AT6: Fleid Standard Addition - QC	AT16:	Solit samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses
AT7: Gemme Sorsen	AT17:	
AT8; Gemme Spec	A718:	
AT9: Gross Alpha	AT19:	
AT10: Propionala/Butyrala/Acetata/Lactate	AT20:	
Analysis Suites:	Contingencies:	
Analysis Sulis #1: Ammonia Nitrogen, Phosphets, Suliste, Iron (Inorganic Analysis)		
		
		<u> </u>

Plan Table Number: LTERM_ANNUAL

DRAFT

Sampler: Cerroll, R. E.

SAP Number: INEEL/EXT-2002-00779

Dete: 11/11/2002 Plan Table Revision: 0

Plan Table Revision: 0.0 Project OU 1-078 ISB REMEDIAL ACTION GWM - LONG TERM ANNUAL (PM)

Project Manager: NELSON, L. O.

	s	ample Description					Sample	Location								Ente	r Ana	dysta T	ypes (/	(T) and	Quant	ty Req	ussted				
				,						AT1	AT2	AT3	AT4	AT5	ATB	A17	AT8	AT9 A	T10 A	T11 AT	12 AT	3 AT1	AT1	AT16	AT17	AT 18 A	AT19 AT20
Sampling Activity	Sample Type	Sample Mairtx	Colii Type	Sampling Method	Planned Date	Area	Type of Location	Location	Depth	⊢	-	\vdash	Н		-	_	-	-+	+	B R	+	+	+			\dashv	+
LTA033	qc	WATER	TBLK		11	TAN	TRIP BLANK	œ	NA				3	T					1	7	3	Τ					
														T		\Box	T		T	T	Ī	Τ	Γ			1	
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The sampling activity displayed on this table represents the first six characters of the sample identification number.	The complete sample identification number (10 characters) will appear on field guidence forms and sample labor	
AT1: Alkalinity	AT11: Sr-90	Commenta:
AT2: Analysis Suits #1	AT12: Tribum	VOCs (TAL) - viryl chloride, trichloroethene, tstrachloroethene, ds-1,2-dichloroethene, and trans-1,2-dichloroethene
AT3: Chemical Oxygen Demand	AT13: VOCs (TAL)	Carior I, 2 Caration designs to
AT4; Ethane/Ethene/Methane	AT14: VOCs (TAL) - MS/MSD	Field Tests - Analysia Suite #1, attainity, COD
AT5: Ethane/Ethene/Methane - MS/MSD	AT15:	Spilt samples will be collected at all locations for VOCs (TAL) and Ethane/Ethene/Methane analyses
ATB: Field Standard Addition - QC	AT18:	Open description with the consecution at all recorded in 101 FOOD (1712) and carterior carrottenine street entering and
AT7: Gamma Screen	AT17:	
AT8: Germa Spec	AT18:	
AT9: Gross Alpha	AT19:	· · ·
AT10: Proplonate/Butyrate/Acetate/Lectate	AT20:	· · · · · · · · · · · · · · · · · · ·
Analysis Sulliss:	Contingencies:	
Analysis Sulla #1: Ammonia Nitrogen, Phosphate, Sulfate, Iron (Inorganic Analysis)		
		

Appendix D

Operable Unit 1-07B In Situ Bioremediation Monitoring Well Information

<u>U-3</u>

Appendix D

Operable Unit 1-07B In Situ Bioremediation Monitoring Well Information

Table D-1. Construction details for Operable Unit 1-07B in situ bioremediation groundwater monitoring wells.

Sample Location	Well Name	Well ID	Elevation at Top of Casing (ft above msl)	Well Total Depth (ft bls)	Screened Interval(s) (ft bls)	Screen Type	Pump Type	Sampling Depth (ft bls)	Pump Discharge Line or Pipe Diameter (in.)	Discharge Line or Pipe Material	Length of Discharge Line (ft)	Estimated Purge Volume (gal)
TSF-05A	ANP-03	71	4,782.00	310.00	180-244	Perforated	RF2	235 ^a	0.5	Polyethylene	275.00	9
TSF-05B	_	71	4,782.00	310.00	269-305	Perforated	RF2	275	0.5	Polyethylene	275.00	9
TAN-10A	_	348	4,780.70	250.00	216–250	Stainless steel	RF4, 5E8	238	1	Stainless steel	233.00	29
TAN-25	_	1117	4,781.38	315.00	217–297	Stainless steel	RF4	218	1	Stainless steel	218.00	27
TAN-26	_	1118	4,781.93	412.00	369–409	Stainless steel	RF4	389	1	Stainless steel	389.00	48
TAN-27	_	1009	4,782.16	253.70		_	RF4, 5E8	235	1	Stainless steel	235.00	29
TAN-28	_	1008	4,781.07	262.00	220–260	Stainless steel	RF4, 5E8	242	0.75	Stainless steel	241.50	17
TAN-29	_	1010	4,782.68	265.00	222.25- 262.25	Stainless steel	RF4, 16E4	253	1	Stainless steel	253.20	31
TAN-30A	_	1012	4,780.62	320.90	299.90– 319.90	Stainless steel	RF4, 5E8	313	0.75	Stainless steel	312.70	22
TAN-31	TANT-INJ- A-003	1219	4,780.83	310.00	205–310	Open hole	RF2 ^b	258	0.5 or 0.625	Polyethylene	275.00 or 500.00	8 or 25
TAN-37A	TANT- MON-A-011	1163	4,782.32	415.90	204–415.90	Open hole	RF2	240	0.5	Polyethylene	250.00	8
TAN-37B	_	1163	4,782.32	415.90	204-415.90	Open hole	RF2	272	0.5	Polyethylene	275.00	9
TAN-37C	_	1163	4,782.32	415.90	204-415.90	Open hole	RF4	375	1	Stainless steel	375.00	46

D-4

Table D-1. (continued).

Sample Location	Well Name	Well ID	Elevation at Top of Casing (ft above msl)	Well Total Depth (ft bls)	Screened Interval(s) (ft bls)	Screen Type	Pump Type	Sampling Depth (ft bls)	Pump Discharge Line or Pipe Diameter (in.)	Discharge Line or Pipe Material	Length of Discharge Line (ft)	Estimated Purge Volume (gal)
TAN-D2	_	339	4,779.89	262.00	116–126	Perforated	RF4	242	1	Stainless steel	241.00	30
	_	_	_	_	201–222	Perforated	_	_	_	_	_	_
	_	_	_	_	232-251	Perforated	_	_	_	_	_	_
TAN-9	TAN-09	346	4,782.62	326	300.4–322.4	Slotted steel	RF4	293	1	Steel	292	35
TAN-1859	_	1859	4,785.23	301	204–301	Open hole	RF2 ^b	220	0.5 or 0.625	Polyethylene	275.00 or 500.00	8 or 25
TAN-1860	_	1860	4,784.99	413	204–413	Open hole	RF2 ^b	269	0.5 or 0.625	Polyethylene	275.00 or 500.00	8 or 25
TAN-1861	_	1861	4,785.53	414	204–414	Open hole	RF2 ^b	239	0.5 or 0.625	Polyethylene	275.00 or 500.00	8 or 25

a. Pump on hose reel is raised to sample this location.

b. Either a Port-a-Reel or EZ-Reel will be used for these wells; the first set of parameters applies to EZ-Reels and the second set of parameters applies to the Port-a-Reels.

RF2 = Grundfos RediFlo-2 pump RF4 = Grundfos RediFlo-4 pump